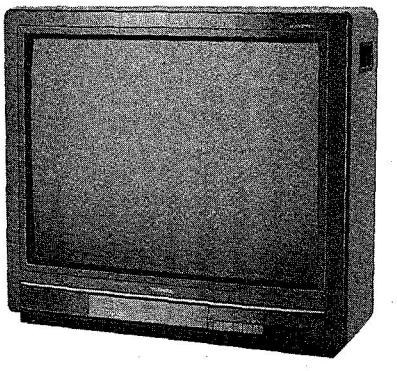
SERVICE DATA
FILE NO. 020-913
11 SYSTEM

TOSHIBA
COLOUR TELEVISION
288X6M



SPECIFICATIONS

Power Input Rating:	137 watts (nominal), AC110 ~ 245 volts, 50/60Hz
Aerial Input Impedance:	75 ohm unbalanced type VHF and UHF
Receiving Channels:	**PAL B/G, SECAM B/G system** Any of VHF channels . . . . . channels 2 to 12 Any of UHF channels . . . . . channels 21 to 69 **PAL D/K, SECAM D/K system** Any of VHF channels . . . . . channels 1 to 12 Any of UHF channels . . . . . channels 21 to 69 **PAL I system** Any of UHF channels . . . . . channels 21 to 69 **NTSC Standard (US M, JAPAN M) system** Any of VHF channels . . . . . channels 2 to 13/1 to 12 Any of UHF channels . . . . . channels 14 to 78/13 to 62 **NTSC 3.58/5.5 System** **NTSC 4.43/5.5 System** . . . . . VTR Play Back **PAL 50/60Hz System** **SECAM 50/60Hz System** . . . . . VIDE DISK Play Back **NTSC 50/60Hz System**
Intermediate Frequencies:	Picture I-F carrier frequency . . . . . 38.0MHz Sound I-F carrier frequency 33.5/32.5/32.0/31.5MHz
Chassis Construction:	IC Solid State, Horizontal Chassis
Picture Tube:	A66JPQ90X01(W) (66 cm measured on diagonal of viewable picture area) 110° Deflection
Sound Output:	3.0 watts (at 10% harmonic distortion), Max. 1.5W
Speaker:	Oval: 5 cm x 12 cm
Cabinet:	Plastic Table Type
Dimension:	Height . . . . . 58.2 cm Width . . . . . 44.0 cm Depth . . . . . 50.55 cm
Weight (Net):	38.0 kg
Features:	Flat and Square tube, On screen display VIDEO and AUDIO input/output terminals, Remote Control.

Specifications are subject to change without notice.

Printed in Japan Apr. 1987 (SO)

SAFETY INSTRUCTIONS

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECUATION," "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" DESCRIBED BELOW.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 30kV at zero beam current (minimum brightness) under 110 ~ 245V AC power source. The high voltage must not, under any circumstances, exceed 32kV. Each time a receiver requires servicing, the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended the reading of the high voltage be recorded as a part of the servicing record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION proteciton. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

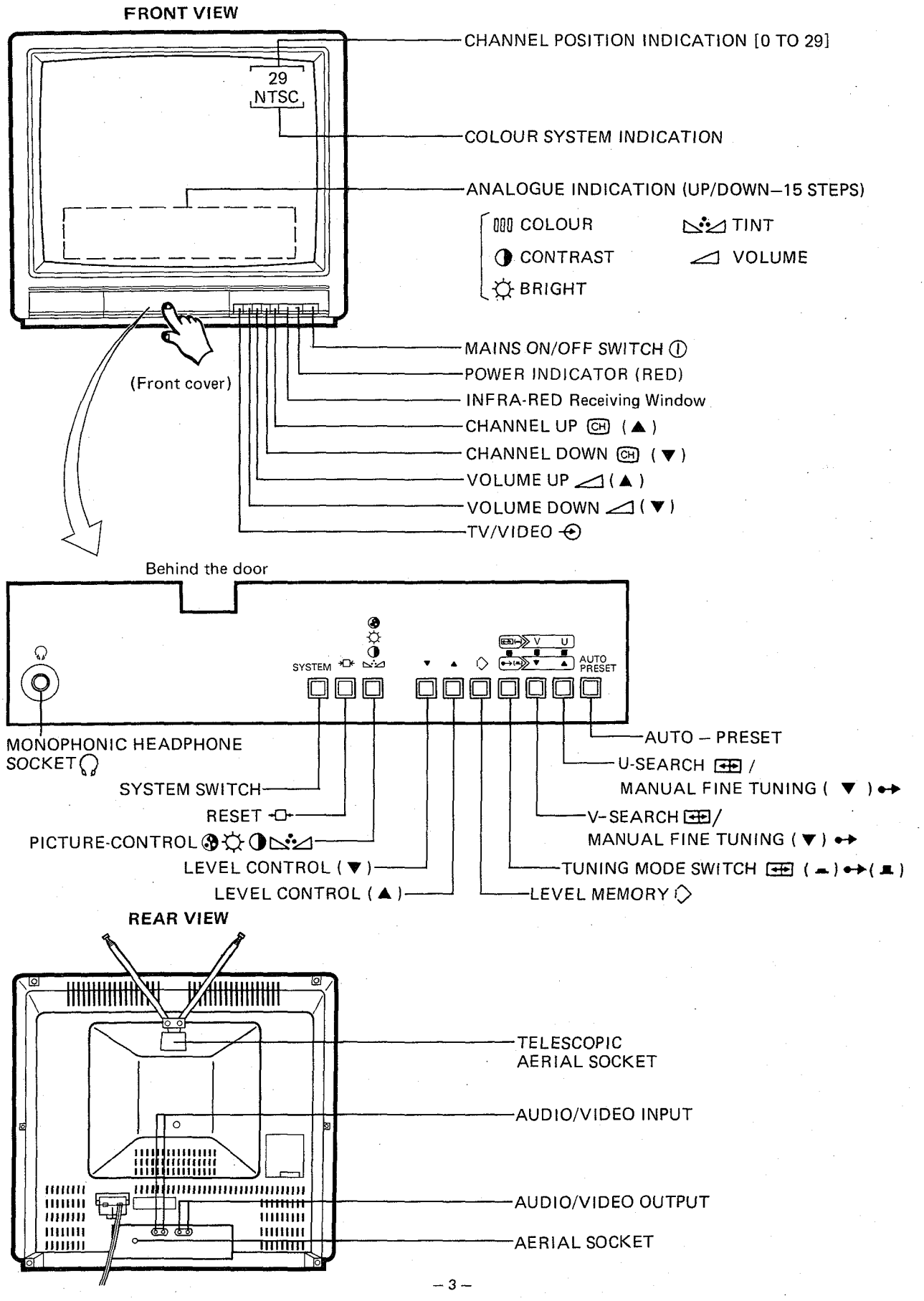
SAFETY PRECAUTION

1. Potentials as high as 28 kV are present when this receiver is operating. Operation of the receiver outside the cabinet or with back board removed involves a shock hazard from the receiver.
   1 Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment.
   2 Alway discharge the picture tube anode to the receiver chassis to keep off the shock hazard before removing the anode cap.
   3 Perfectly discharge the high potential of the picture tube before handling the tube. The picture tube is highly evacuated and if broken, glass fragments will be voilently expelled.
2. If any Fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list.
3. When replacing parts or circuit boards, wind the lead wires around terminals before soldering.
4. When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor 10mm away from circuit board.
5. Keep wires away from high voltage or high temperature components.
6. This receiver can be operated under AC 110 ~ 245 volts, 50/60Hz. NEVER connect to DC supply or any other power.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATION protection afforded by them cannot necessarily be obtained by using replacement compoments rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this manual and its supplements, electrical components having such features are identified by the international hazard symbols on the schematic diagram and the parts list.
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may creat X-RAY RADIATION.

FRONT CONTROLS AND REAR VIEWS



AERIAL CONNECTION

- **Indoor aerial**

  Plug the telescopic aerial (supplied) into socket on the rear cabinet as shown in figure C.

  Attach the leads of telescopic dipole aerial to the aerial terminal socket through the 75Ω–300Ω adaptor as shown in figure B. Pull out the rods and spread them.

  Adjust their length, angle and direction for best reception.

- **Outdoor aerial**

  If it is difficult to get good reception with the indoor aerial, ... you may be located in a concrete building, a mountainous area or surrounded by many tall buildings . . . . use the outdoor aerial for better results.

  Optimum colour reception requires a good outdoor aerial. If you intend to use a previously installed outdoor aerial, check the aerial and its leads for the effects of weathering. Your Toshiba dealer or service personnel can advise you the best aerial to use in your area.

  When using an outdoor aerial, disconnect the leads of the indoor aerial from the aerial terminal socket.

- In case of using the coaxial cable (75Ω) for UHF/VHF aerial, connect the plug (refer to figure D) into the 75Ω socket as shown in figure A.
- In case of using the twin-lead type feader (300Ω) for UHF/VHF aerial, trim the lead as shown in figure E and connect the lead to the terminals on the adaptor. Then connect the adaptor to the 75Ω socket as shown in figure B.

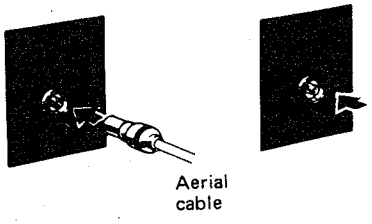


Fig. A

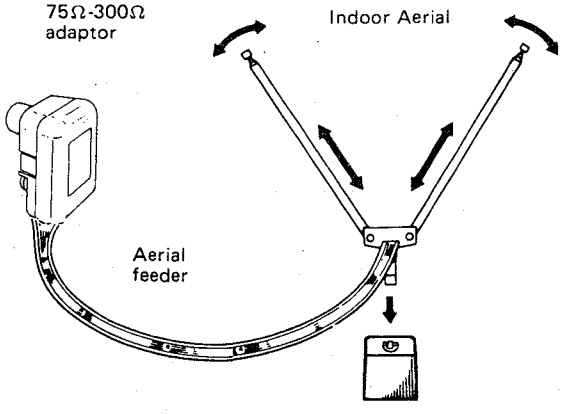


Fig. B

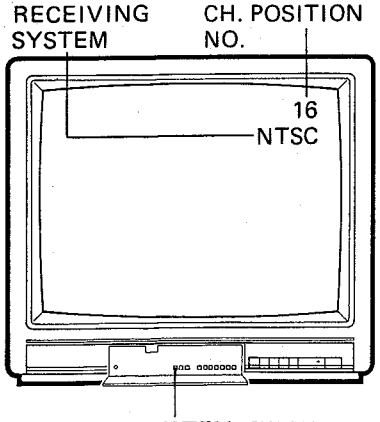
Fig. D

Fig. E

Fig. C

COLOUR SYSTEM SELECTION SWITCH OPERATION

This TV receiver can receive 11 systems.



- AUTO . . . . . All signals of 11 systems can be received.
- PAL . . . . . PAL signal can be received.
- SECAM . . . . . SECAM signal can be received.
- 443NTSC . . . . . Signal from VTR on 4.43 NTSC can be received.
- 358NTSC . . . . . 3.58 NTSC signal can be received.
  U.S.CHANNEL, JAPAN CHANNEL
  (PHILIPPINES, KOREA)

Note: Colour system indication is displayed in green when the TV is switched on automatic mode and in cyanic when switched on manual mode.

OPERATING THE TELEVISION RECEIVER

TO SWITCH ON THE RECEIVER

Push in the POWER switch. POWER indicator will be illuminated.

Note: If the power stays in standby mode, push the CH ▲ ▼ buttons.

TO ADJUST VOLUME (▲ ▼)

Keep on pressing the VOLUME UP button for increase in volume.

Keep on pressing the VOLUME DOWN button for decrease in volume.

Release the button at your desired volume level.

CHANNEL SELECTION AND TUNING (▲ ▼) CH

You can select your favourite program by the channel selection keys on the remote control hand unit or "CHANNEL UP/DOWN" keys on the front of the receiver.

To enjoy the program which is not preset, set the channel by following procedure.

(1) CHANNEL PRESET PROCEDURE

Select the position to be preset by the Channel Position Button (▲ or ▼) on the TV set or the remote control hand unit or by the Direct Position Selector on the remote control hand unit.

To select a position from 10 to 29, press either the "1–" or "2–" button first, and then press one of the buttons from "0" to "9".

For example: 16th. position; Press the "1–" and "6" buttons.
29th. position; Press the "2–" and "9" buttons.

(2) SEARCH

a. When using "SEARCH" key, the system switch should be selected.
b. Push on the tuning mode switch. (⇄(⌁))
c. Push the SEARCH key of channel band to be searched (UHF or VHF).
d. When television signal is caught, search operation stops and the channel is memorized automatically.
e. During search operation, " >>> " is indicated under the position indication.
f. When SEARCH gets to the END of VHF or UHF, the display " >>> " will flash.

(3) MFT (Manual Fine Tuning)

a. Push off the tuning mode switch. (●▶(⌁))
b. Tune the fine picture by MFT button. (▲ or ▼)

AUTO PRESET

By pressing the AUTO PRESET button, channel position number and indication " >>> " are displayed at the top right-hand side of the screen, and then "SEARCH" operation starts.

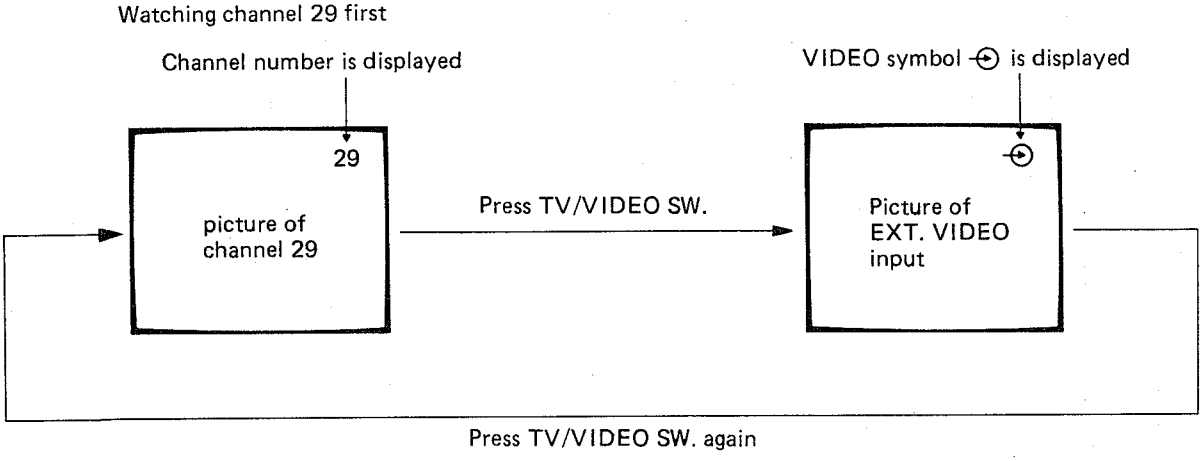
Once started, "SEARCH" selects signals presenting on broadoast in sequence from lower channel to higher channel and the receiver set memorises automatically these selected channels storing them one by one into the position one and the sub-sequent positions.

With completion of the operation, indication " >>> " disappears. Now "SEARCH" returns to the position one and the channel selected by the position one can be received.

TV/VIDEO SWITCH

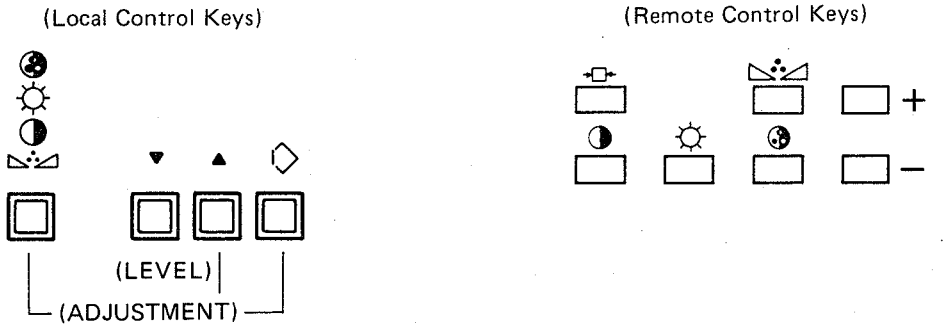
When you enjoy the program from the video equipment, such as VCR, press this button on and "VIDEO" indication comes out as illustrated below.

The TV picture changes as shown in the following figures.



CONTROL ADJUSTMENTS

CONTROL KEYS

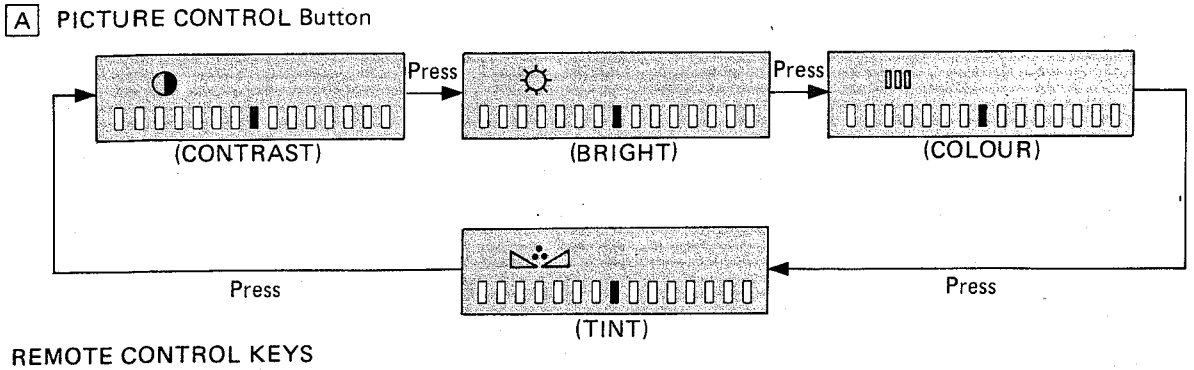


FUNCTION SELECT

(1) LOCAL KEYS

The PICTURE-CONTROL (A) Button decides a function to be adjusted among CONTRAST, BRIGHT, COLOUR and TINT in the order shown below.

Note: To adjust TINT (for NTSC 3.58 and NTSC 4.43 systems)

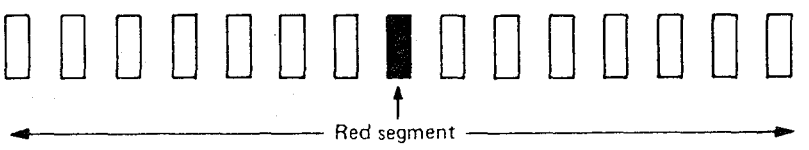


(2) REMOTE CONTROL KEYS

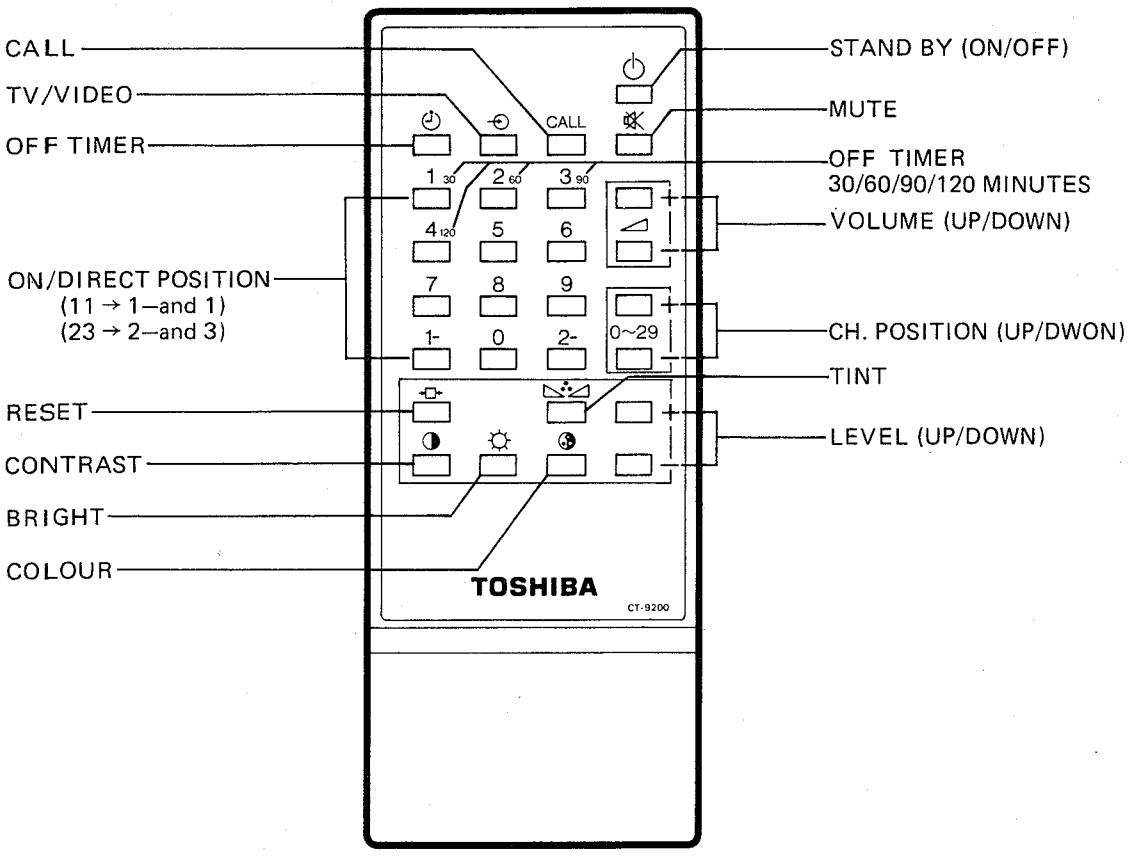
Each function is selected directly.

ADJUSTMENT

1. The level control keys (▲ or ▼) are common to the functions. These keys work only while the selected function is displayed. (for 4 sec.)
2. Above display will disappear if no additional pressing of CONTROL or LEVEL (▲ / ▼) key is done within 4 seconds.
3. The last adjusted value will be stored into memory IC when LEVEL (▲ or ▼) key is released.
4. The RESET (⊣□⊢) key resets the value corresponding to picture control functions, sucha as CONTRAST, BRIGHT, COLOUR and TINT to the value which is previously programmed by customers.
   In order to program the reset value, press the MEMORY (◇) key after adjusting each function.
5. Adjustment steps and indication
   Each function can be adjusted with 64 steps and it's approx. adjusted value is displayed with 15 steps.

	FUNCTION	ON-SCREEN COLOR BAR DISPLAY  	
		CONTROL DOWN ▼ Button (The red segment moves left)	CONTROL UP ▲ Button (The red segment moves right)
PICTURE-CONTROL Button	CONTRAST ◑	Weak	Strong
	BRIGHT ☼	Dark	Light
	COLOR ▯▯▯	Pale	Deep
	TINT ◺	Purplish	Greenish

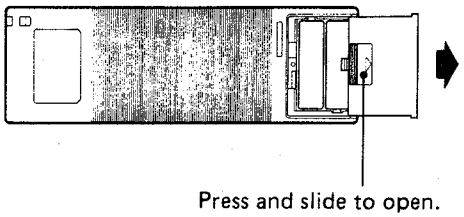
REMOTE CONTROL HAND UNIT



Before operating

INSTALLING THE BATTERIES

1. Remove the battery cover.
2. Insert the 2 "AA" (pencil size) 1.5V batteries making sure the polarity (+ or −) of the batteries matches the polarity marks inside the unit.
3. Close the battery cover.

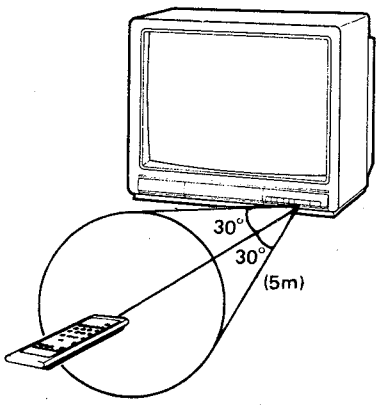


Press and slide to open.

TIPS FOR REMOTE OPERATION

- If intermittent remote control operation occurs, replace the batteries according to "INSTALLING THE BATTERIES."
- The battery life should be about a year under normal use.
- When the Remote Control Hand Unit is not used for a long period of time or when the batteries are worn out, take out the batteries to prevent liquid leak.
- Do not throw the batteries into a fire. Dispose of used batteries in the specified places.
- Take care not to drop, dampen, disassemble the Remote Control Hand Unit.

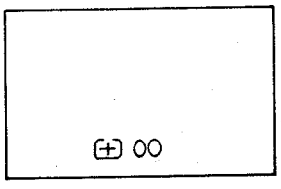
Effective Range



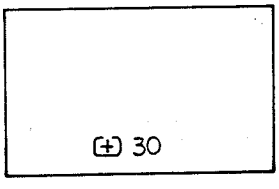
REMOTE OPERATION

Before using the Remote Control Hand Unit, push the power switch on the receiver to turn the TV set on.

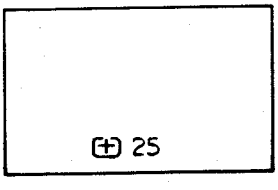
1. STAND-BY "ON/OFF" Button (⏻)
   To switch on, push the button. To switch off, push the button again.
2. ON/DIRECT POSITION Selctor
   To switch the TV set "ON", press any of the position buttons, and the program in that position comes out.
3. VOLUME UP or DOWN Button (◿)
   [+] Continuous press increases Volume gradually.
   [−] Continuous press decreases Volume gradually.
   Release the button at your desired volume.
4. BRIGHTNESS Button (☼)
   Press the BRIGHTNESS ☼ button.
   [+] Continuous press increases Brightness gradually.
   [−] Continuous press decreases Brightness gradually.
5. COLOUR Button (◍)
   Press the COLOUR ◍ button.
   [+] Continuous press increases Colour gradually.
   [−] Continuous press decreases Colour gradually.
6. CONTRAST Button (◑)
   Press the CONTRAST ◑ button.
   [+] Continuous press increases Contrast gradually.
   [−] Continuous press decreases Contrast gradually.
7. TINT Button ( )
   Press the TINT button.
   [+] Continuous press increases Tint gradually.
   [−] Continuous press decreases Tint gradually.
8. CALL Button
   The selected CHANNEL NUMBER is indicated on the TV screen when the "CALL" button is pressed.
   The indication disappears by the second press.
9. RESET Button ( )
   By pushing the RESET button, the levels of the colour, the brightness and contrast return to the original levels.
10. MUTE Button ( )
    Pushing the button stops the sound temporarily.
    Pushing the button again returns the sound to the volume at which it was set immediately before the muting.
    Use when the telephone rings.
11. OFF-TIMER (⏲)
    OFF-TIMER function is incorporated in new control system. Four kinds of setting time, such as 30, 60, 90 and 120 min., are available and its remaining time before turning off a set can be displayed on the screen.
    OFF-TIMER is only operated with Remote Control Hand Unit.
    For example, if you wish to switch the TV set off after 30 minutes:
    1. Press TIMER ⏲ Button.
       The TIMER mode is displayed on the screen.



    2. Press " ①30 " Button.
       " ⏲ 30" will appear on the screen and OFF-TIMER INDICATOR lights up.



    3. Press TIMER Button again.
       The display of TIMER mode will disappear.
    4. When you want to know the remaining time before tuning off a set, press TIMER button. Then the remaining time will show up on the screen.

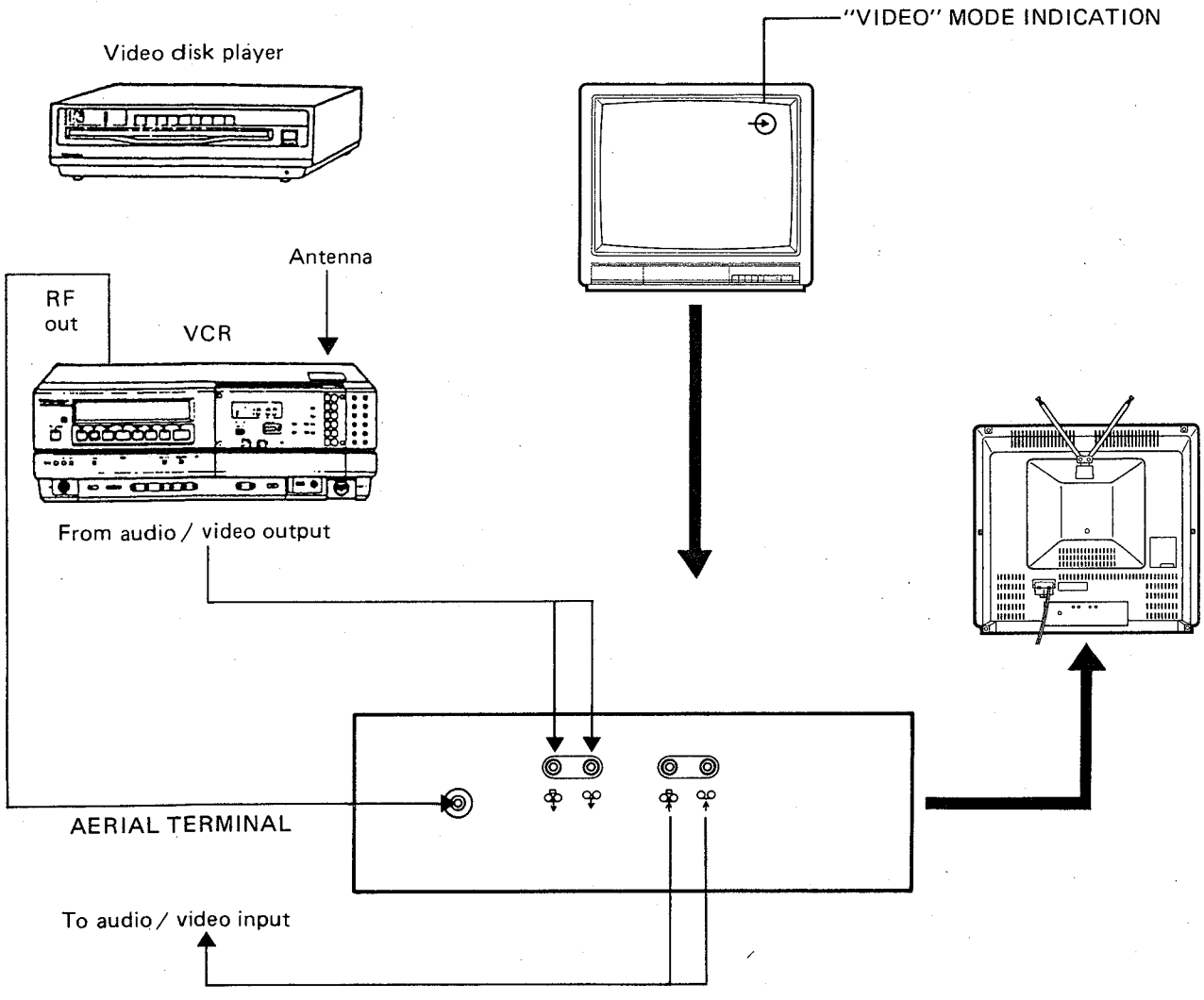


Note: To cancel the timer operation, ① press TIMER button ② Press RESET button.
Timer operation is also canceled by turning the power off.

INPUT AND OUTPUT TERMINALS

VIDEO AND AUDIO INPUT/OUTPUT TERMINALS

- This TV is provided with a video and audio input/output terminals, which can be connected with input/output from video equipment (VCR and video disk player).



REMOVAL AND SERVICING OF CHASSIS

WARNING: BEFORE REMOVING COVER, RECEIVER MUST BE DISCONNECTED FROM MAINS SUPPLY.

DRAWING OUT THE CHASSIS

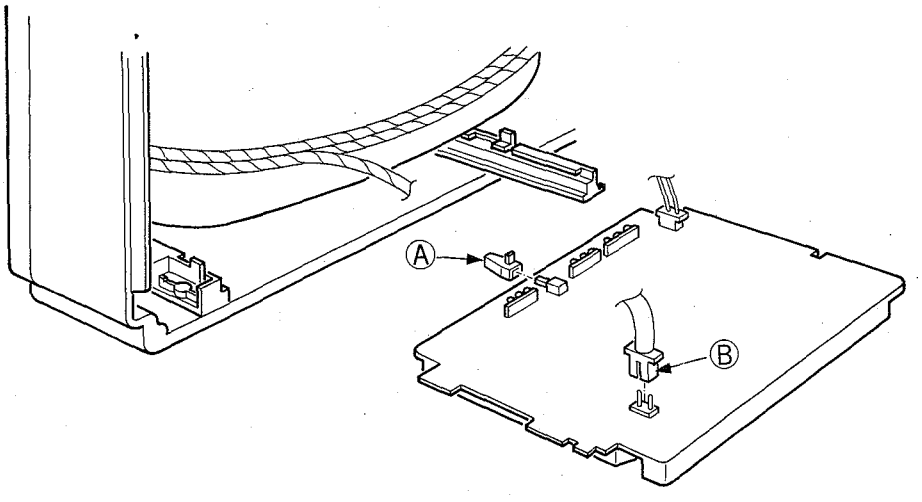


Figure 1.

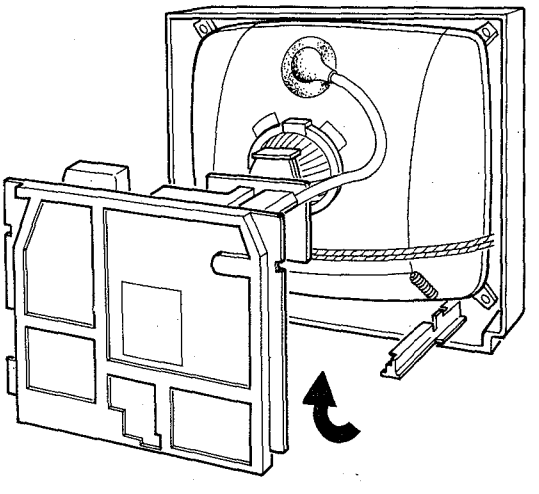


Figure 2.

1. Pull out The Main Board and detach the small knobs A of the (S201 TUNING MODE) SW. (See Figure 1)
2. Disconnect the connector B (P803) of degaussing coil from The Power Board. (See Figure 1)
3. Stand the chassis facing the foil side towards you, when servicing the foil side of the board. (See Figure 2)

CHASSIS REAR VIEW

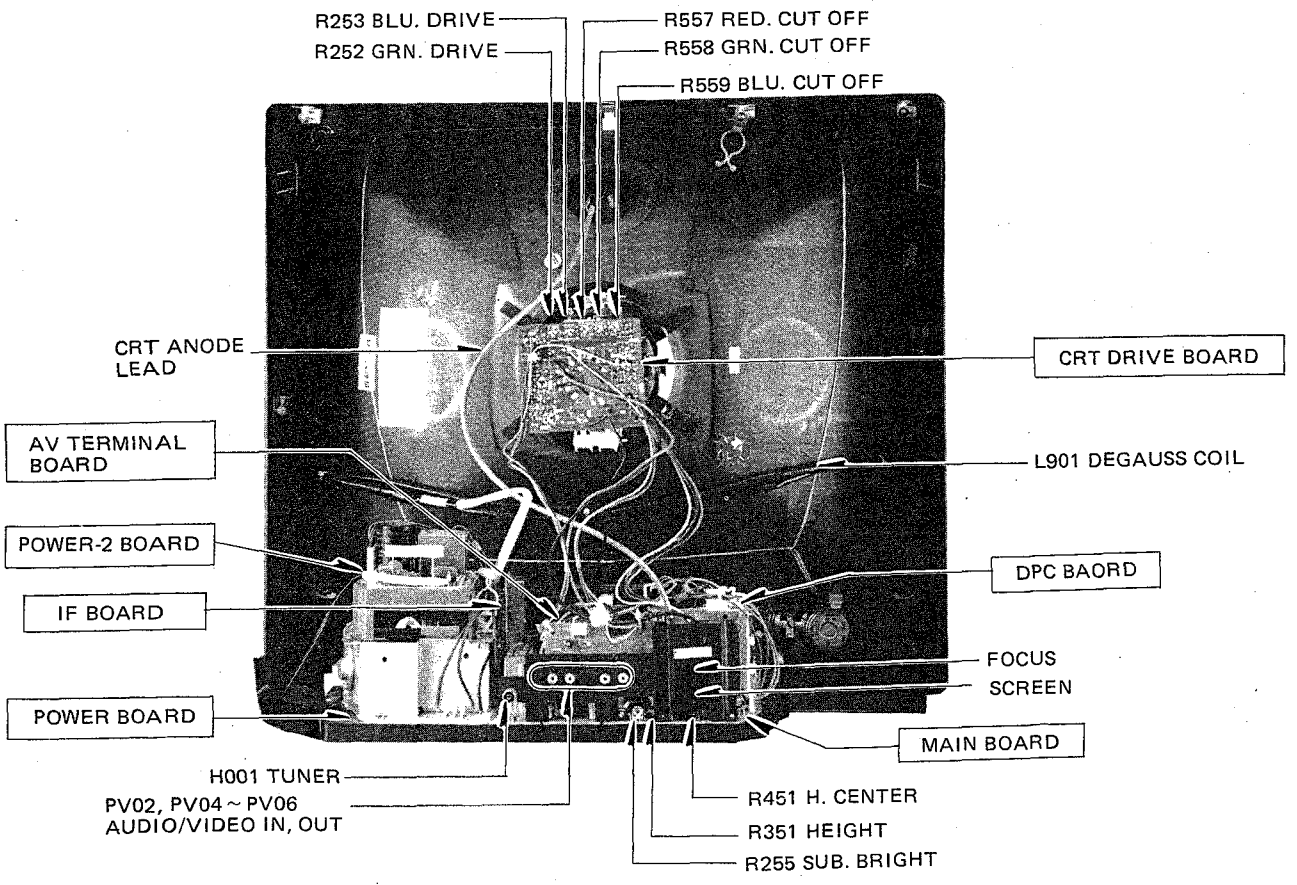


Figure 3.

P.C. BOARD VIEW

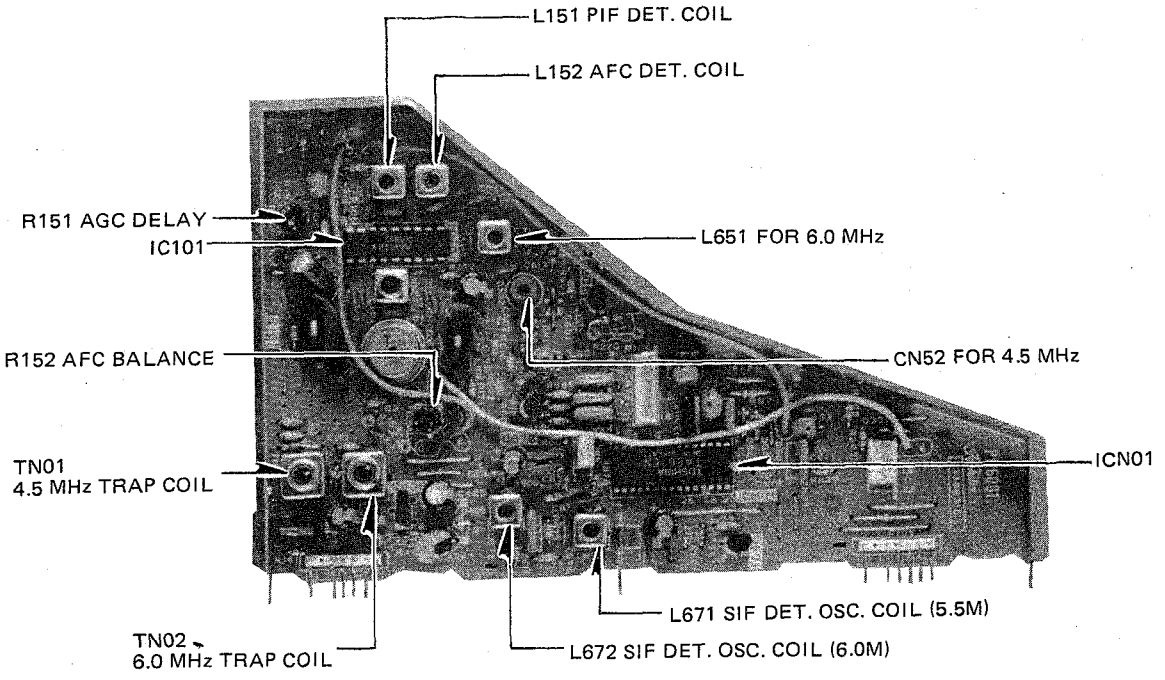


Figure 4. IF Board

CHASSIS TOP VIEW

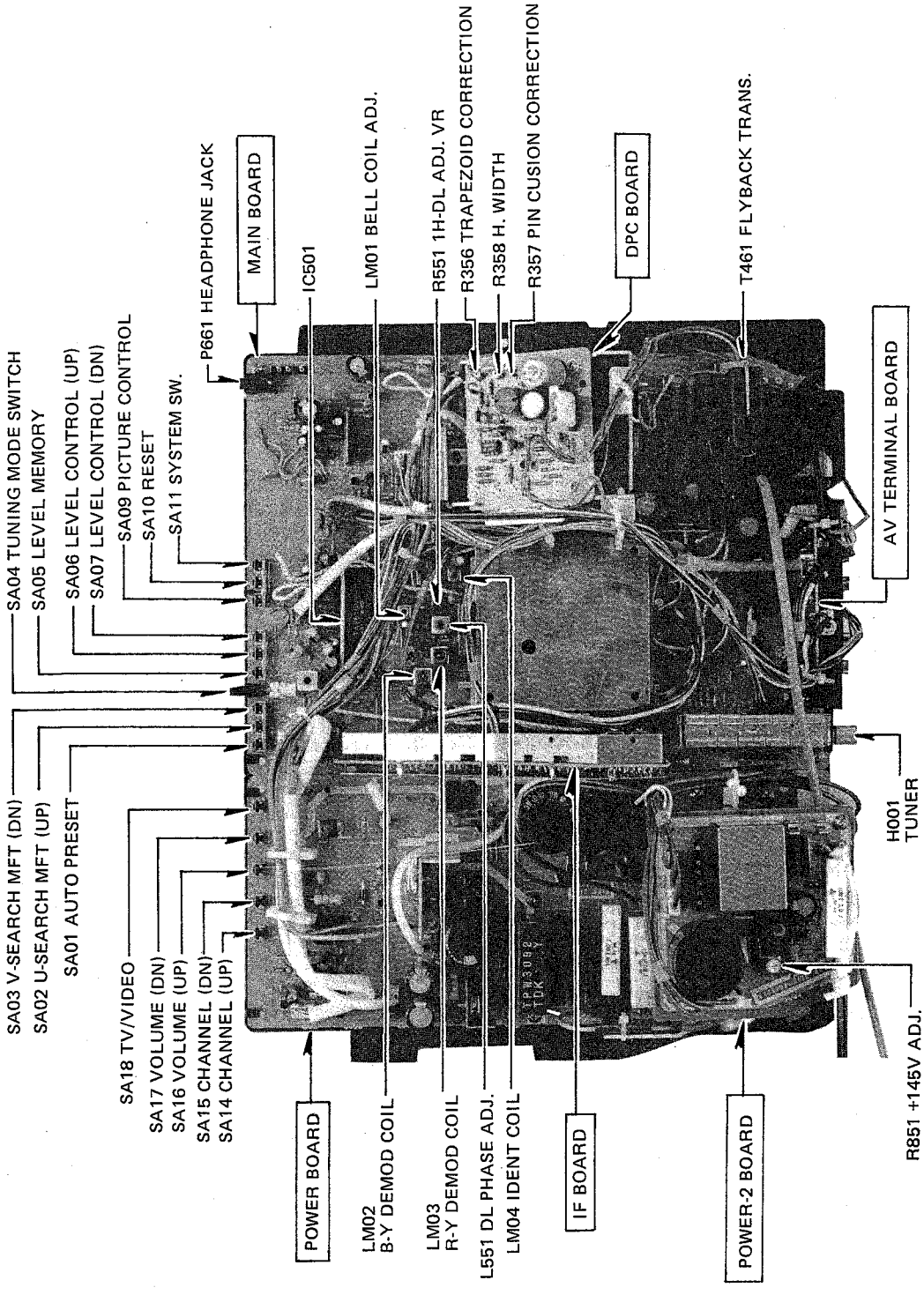


Figure 5. Chassis Top View

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION," "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

INSTALLATION AND SERVICE ADJUSTMENTS

GENERAL INFORMATIONS

All adjustments are thoroughly checked and corrected when the receiver leaves the factory. Therefore the receiver should operate normally and produce proper colour and B/W pictures upon installation. However, several minor adjustments may be required depending on the particular location in which the receiver is operated.

This receiver is shipped completely in cardboard carton. Carefully draw out the receiver from the carton and remove all packing materials.

Plug the power cord into a convenient 220 volts 50 Hz AC two pin power outlet. Turn the receiver ON.

Check and adjust all the customer controls such as BRIGHTNESS, CONTRAST and COLOUR Controls to obtain natural colour or B/W picture.

AUTOMATIC DEGAUSSING

A degaussing coil is mounted around the picture tube so that external degaussing after moving the receiver is normally unnecessary, providing the receiver is properly degaussed upon installation. The degaussing coil operates for about 1 second after the power to the receiver is switched ON. If the set is moved or faced in a different direction, the power switch must be switched off at least 10 minutes in order that the automatic degaussing circuit operates properly.

Should the chassis or parts of the cabinet become magnetized to cause poor colour purity, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube, the sides and front of the receiver and slowly withdraw the coil to a distance of about 2 m before disconnecting it from AC source. If colour shading still persists, perform the COLOUR PURITY ADJUSTMENT and CONVERGENCE ADJUSTMENTS procedures, as mentioned later.

RECTIFIER VOLTAGE ADJUSTMENT (R850)

1. Connect the AC plug of TV to the AC power line through the AC voltage adjuster.
   Note: Check AC line waveform for the low distortion.
2. Turn in an active channel. Adjust the BRIGHTNESS and CONTRAST controls for normal picture.
3. Set the AC input voltage for TV to 140 V (rms).
4. Connect the voltmeter (DC range) to the plus lead of C805.
5. Adjust R850 until the voltage reading on the meter turns from the low voltage (185 V approx.) to 350 V approx.

+145 VOLT POWER SUPPLY ADJUSTMENT (R851)

CAUTION: +B voltage closely relates to the high voltage. To prevent hazardous X-RAY RADIATION, the +B voltage must be properly adjusted to +145 volts.

1. Turn in an active channel. Adjust the BRIGHTNESS and CONTRAST Controls for normal picture.
2. Check that the AC power Line voltage is nromal. (AC 220 volts, 50 Hz).
3. Connect a VTVM between Pin 28 (+145 V) on POWER Board and chassis ground.
4. Adjust the +B ADJ. (R851) on POWER Board for +145 volts reading. Remove the VTVM.

HIGH VOLTAGE CHECK

CAUTION: There is no HIGH VOLTAGE ADJUSTMENT on this chassis.

1. Connect an accurate high voltage meter to the second anode of the picture tube.
2. Turn on the receiver. Set the BRIGHTNESS and CONTRAST Controls to minimum (zero beam current).
3. High voltage will be measured below 32 kV.
4. Rotate the BRIGHTNESS Control to both extremes to be sure the high voltage does not exceed the limit of 32 kV under any conditions.

HEIGHT ADJUSTMENT

HEIGHT Control (R351) on MAIN Board changes the size of the picture or pattern, having an equal effect on the top and bottom. Make final adjustment to overscan the mask 2 cm at top and bottom.

HORIZONTAL CENTER ADJUSTMENT

1. Receiver the WG PHILIPS pattern.
2. Set the contrast and colour to minimum, and the brightness to maximum.
3. Adjust H. CENTER Control (R451) so the pattern center can be located at the screen center.

PICTURE WIDTH AND DISTORTION ADJUSTMENT (Width, Pincushion Distortion, Trapezoid Distortion)

1. Perform this adjustment after +B and H. CENTER adjustment are completed.
2. Receive the WG PHILIPS pattern.
3. Set the contrast and colour to minimum, and the brightness to maximum.
4. Adjust H. WIDTH Control (R358) for the horizontal width so that the white frags on left and right of the pattern are just hidden.
5. Adjust PINCUSHION CORRECTION Control (R357) to correct the vertical line on left and right straight.
6. Adjust TRAPEZOID CORRECTION Control (R356) to correct the trapezoid distortion.
7. Readjust H. WIDTH control for the precision.

FOCUS ADJUSTMENT

Adjust FOCUS Control on FLYBACK TRANS. (T461) for well defined scanning lines in the centre area on the screen.

DELAYED R-F AGC ADJUSTMENT

1. Turn the set in the strongest station in your area.
2. Turn AGC DELAY Control (R151) on IF Board to fully counterclockwise position.
3. Adjust AGC DELAY Control clockwise until noise (snow) disappears on the screen.

AFC (Automatic Frequency Control) FIELD ALIGNMENT

1. Tune the set to an active channel and adjust fine tuning for best picture with MFT UP, DOWN buttons.
2. To activate AFC, temporarily tune in the next active channel with SEARCH button and return to the previous channel.
3. Adjust L152 for the best turned picture.
4. Detune to higher or lower side with MFT button. Then temporarily change to the next active channel with SEARCH button, and return to the previous channel to check for the best turned picture.

BELL COIL (LM01) ADJUSTMENT

1. Receive SECAM colour bar signal.
2. Connect the synchroscope to the terminal TPM-01.
3. Adjust LM01 for the flat level of amplitude in each colour bar waveform on the scope. (See figure 6)

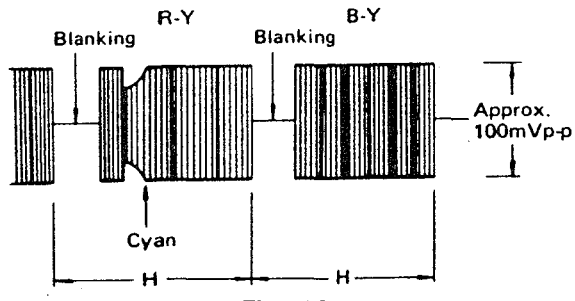


Figure 6

IDENT COIL (LM04) ADJUSTMENT

1. Receive SECAM colour bar signal.
2. Connect the DC voltmeter (Digital Voltmeter) to the pin 23 of IC501.
3. Adjust LM04 for the maximum indication (approx. DC 10 V) on the meter.

B-Y, R-Y DEMOD COIL (LM02, LM03) ADJUSTMENT

1. Receive SECAM colour bar signal.
2. Leave the COLOUR, BRIGHTNESS and CONTRAST Controls free.
3. Connect the synchroscope to the pin 62 of IC501.
4. Adjust LM02 so that the white level in picture part reaches to the vertical retrace line. (See figure 7)
5. Then change the connection of synchroscope from the pin 62 to the pin 60 of IC501.
6. Adjust LM03 so that the white level in picture part reaches to the vertical retrace line. (See figure 8)

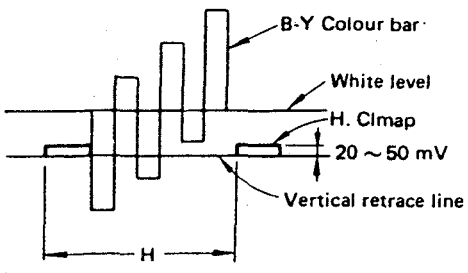


Figure 7

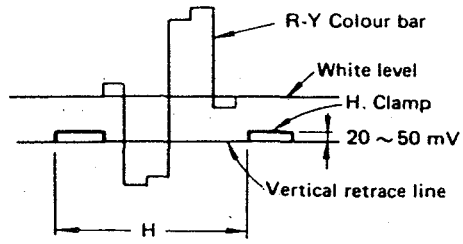


Figure 8

PAL MATRIX ADJUSTMENT

1. Turn in the colour programme PAL Philips pattern.
2. Set the COLOUR Control VR. to obtain the proper colour.
3. If the PAL MATRIX adjustment is in correct, the Ventian Blind would appear in the colour bars area. This case needs the adjustment.
4. At the first, adjust DL PHASE ADJ. Coil (L551) to minimize the Venetian Blind.
5. Next, adjust 1H-DL ADJ. VR (R551) to minimize the Blind.
6. Remove the capacitor, and if the Venetian Blind still remains, adjust 1H-DL PHASE ADJ. Coil (L551) to minimize the Blind again.
7. Repeat the item 5 and 6 procedures, adjust the R551 and L551 until the Blind does not appear when the capacitor is connected.

CRT GREY SCALE ADJUSTMENT

1. Turn in an active channel.
2. Turn the SCREEN Control (on T461) fully counter clockwise.
3. By rotating the RED, GREEN and BLUE CUT OFF Controls (R557, R558, R559) clockwise from the minimum.
4. Set the GREEN and BLUE DRIVE Controls (R252, R253) to the mid position.
5. Set the SERVICE SW. (S202) in the H. line position.
6. Short temporarily Terminal P590 on the CRT DRIVE Board.
7. Set the CONTRAST, COLOUR Controls to minimum and BRIGHTNESS Control to centre position.
8. Rotate the SCREEN Control gradually clockwise until the first line appears slightly on the screen. Then turn fully counterclockwise the two CUT OFF Controls corresponding to the colours of the first and the second horizontal lines to eliminate the lines.
9. Rotate the SCREEN Control gradually clockwise until the first horizontal line of a colour (RED, GREEN or BLUE) appears slightly on the screen. Set the SCREEN Control to this position. At the base of the colour, rotate the remaining two CUT OFF Controls gradually clockwise until the horizontal lines of each colour appear slightly on the screen.
10. Open the terminal P590 on the CRT DRIVE Board.
11. Adjust the CUT OFF Controls to obtain the slightly lighted horizontal lines in the same levels of three colours (RED, GREEN and BLUE). The lines may look like white if the CUT OFF Controls are adjusted properly.
12. Return the SERVICE SW. (S202) in the Receiving position.
13. Set the BRIGHTNESS Control to the maximum and COLOUR Control to the minimum.

14. Adjust the BLUE and GREEN DRIVE Controls (R252/R253) to obtain proper white-balanced picture in high light areas.
15. Set the BRIGHTNESS and CONTRAST Controls to obtain dark grey raster. Then check the white balance in low brightness. If the white balance is not proper, retouch the CUT OFF Controls and DRIVE Controls to obtain a good white balance in both low and high light areas.

SIF DET. ADJUSTMENT
L651 FOR 6.0 MHz

1. Set the system switch (SA11) to the PAL/SECAM position.
2. Supply +9 V bias to SIF SW (pin 25 of ICN01).
3. Connect DC 0 V to pin 1 of IC101 on IF Board.
4. Connect the 6.0 MHz signal (Modulation: 400 Hz/ 15 kHz deviation, 100 dBμ) of SIF S.G. to pin 16 of IC 101 through a capacitor 0.01 μF.
5. Connect the millivoltmeter to pin 11 of IC101.
6. Adjust L651 for the maximum reading on the meter.

CN52 FOR 4.5 MHz

1. Set the system switch (SA11) to the 3.58 NTSC position.
2. Short pin 25 of ICN01 to ground.
3. Connect DC 0 V to pin 1 of IC101 on IF Board to deactivate PIF circuit.
4. Connect the 4.5 MHz signal (Modulation: 400 Hz/ 7.5 kHz deviation, 100 dBμ) of SIF S.G. to pin 16 of IC101 through a capacitor 0.01 μF.
5. Connect the millivoltmeter to pin 11 of IC101.
6. Adjust CN52 for the maximum reading on the mter.

SIF DET. ADJUSTMENT 6.0 MHz OSC. COIL (L672)

1. Supply +12 V to the IF Board.
2. Short the C677 (R697 side) through a 10 kohm resistor to ground.
3. Apply the 6.0 MHz signal (No modulation, 100 dBμ) of SIF S.G. to Base of Q672 through a capacitor 0.01 μF.
4. Connect oscilloscope to pin 9 of ICN01.
5. Adjust L672 so that the response on oscilloscope can be maximum.

SIF DET. ADJUSTMENT 5.5 MHz OSC. COIL (L671)

1. Supply +12 V to the IF Board.
2. Supply +12 V to Anode of D302 through 10 kohm resistor.
3. Apply the 5.5 MHz signal (No modulation, 100 dBμ) of SIF S.G. to pin 27 of ICN01 through a capacitor 0.01 μF.
4. Connect oscilloscope or DC voltmeter to C677 (R697 side).
5. Adjust L671 so that the response on oscilloscope or DC voltmeter can became +4.5 V.

SUB-BRIGHTNESS ADJUSTMENT

1. Turn in a colour programme.
2. Set the CONTRAST Control to the minimum and the BRIGHTNESS Control to the centre.
3. Set the COLOUR Control to the minimum.
4. Set the SUB-BRIGHT, Control (R255) to the centre and leave the receiver for five minutes in this state.
5. Watching the picture well, adjust the SUB-BRIGHT. Control in the position where the picture does not show evidence of blooming in high bright area and not appear too dark in low bright portion.
6. Check the proper picture variation by rotating the CONTRAST and BRIGHTNESS Controls to both extremes.
7. If the picture does not appear dark with the CONTRAST and BRIGHTNESS Controls turned to the minimum, or not appear bright with the controls turned to the maximum, adjust the SUB-BRIGHT. Control again for the acceptable picture.

PICTURE I-F TRAP ALIGNMENT

NOTE . . . . . Perform this adjustment prior to I-F SWEEP and AFC ALIGNMENTS.
GENERAL . . . . . Refer to Figure 9 for the equipment connection.
PRELIMINARY STEPS . . . . . 1. Disconnect the solder link SL-1 (◐ see Figure 9.) on the foil side of the MAIN Board.
2. Supply +12 volts to pin 3 of P102 on the IF Board.
3. Supply +8 volts bias to the pin 1 of IC101 on the IF Board.
4. Turn AGC DELAY Control (R151) on the IF Board fully clockwise.
SWEEP/MARKER GENERATOR . . . . . Connect to the point ⓓ as shown in Figure 9 on the IF Board.
OSCILLOSCOPE . . . . . Connect through the detector (see Figure 9.) to the collector of Q161 on the IF Board.

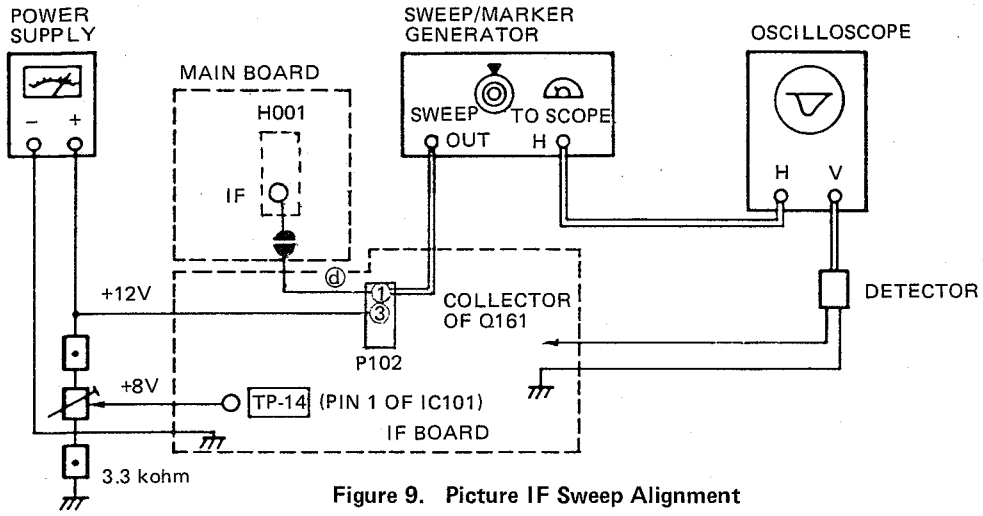


Figure 9. Picture IF Sweep Alignment

STEP	SWEEP/MARKER GENERATOR	ADJUST	PROCEDURE
TN01 33.5 MHz/TN02 32.0 MHz TRAP ALIGNMENT Control the sweep out put for easy alignment. Set the system SW to 3.58 NTSC system.			
4.5 MHz Trap Coil	33.5 MHz Marker "ON"	TN01	• Set the IF Marker for 33.5 MHz (P-4.5M) • Adjust TN01 so that 33.5 MHz marker point is placed at bottom of response. (See Figure 10.)
6.0 MHz Trap Coil	32.0 MHz Marker "ON"	TN02	• Set the IF Marker for 32.0 MHz (P-6.0M) • Adjust TN02 so that 32.0 MHz marker point is placed at bottom of response. (See Figure 10.)

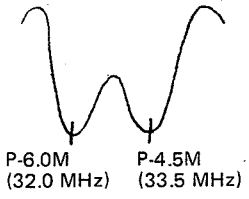


Figure 10. Trap Response

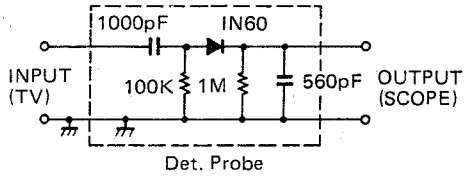


Figure 11. Detector Diagram

PICTURE I-F SWEEP ALIGNMENT

GENERAL . . . . . Refer to Figure 12 for test equipment connection.
PRELIMINARY STEPS . . . . . 1. Disconnect the solder link SL-1 (◐-see Figure 12) on the foil side of the MAIN Board.
2. Supply +12 volts to the IF Board.
3. Supply adjustable bias to the pin 1 of IC101 on the IF Board.
4. Turn AGC DELAY Control (R151) on the IF Board fully clockwise.
SWEEP/MARKER GENERATOR . . . . . Connect to the point ⓓ as shown in Figure 12 on the IF Board.
Signal: IF Sweep 70 ~ 80dB
OSCILLOSCOPE . . . . . Connect through the resistor 100 kohm to the pin 18 of IC101 on the IF Board.

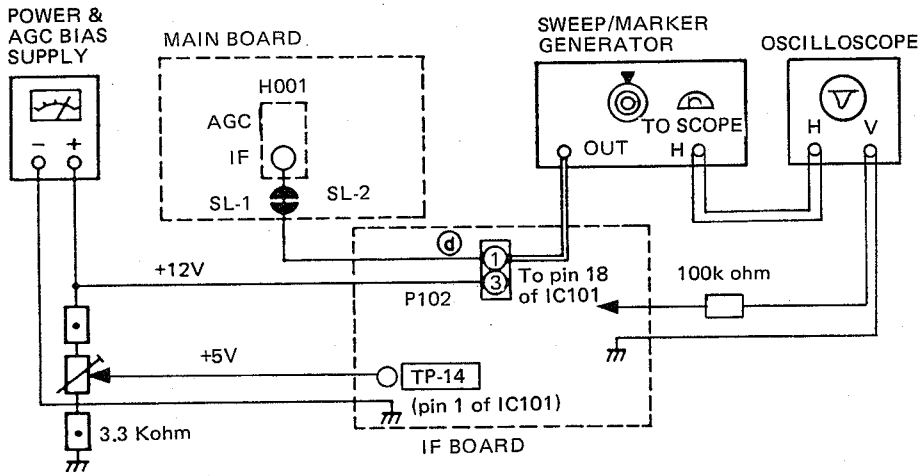


Figure 12. Picture IF Sweep Alignment

STEP	SWEEP/MARKER GENERATOR	ADJUST	REMARKS
L151 ALIGNMENT Control the sweep output for easy alignment			
Detector Coil (L151)	38.0 MHz Marker "ON"	L151	• Adjust L151 so that 38.0 MHz marker point is placed at the minimum of response. (see Figure 13.)
After completing the above steps, disconnect the equipment and re-solder the solder links. Switch on the receiver, and adjust the AGC Delay control (R151) following DELAYED R-F AGC ADJUSTMENTS.			

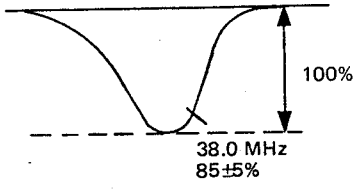


Figure 13.

AFC ALIGNMENT

GENERAL . . . . . Refer to Figure 14 for test equipment connection.
PRELIMINARY STEPS . . . . . 1. Disconnect the solder link SL-1 (◐ see Figure 14 on the foil side of the MAIN Board.
2. Supply +12 volts to the IF Board.
3. Turn AGC DELAY Control (R151) on the IF Board fully clockwise.
4. No external bias supply is required.
DVM . . . . . Connect to pin 4 of P102 and ground.

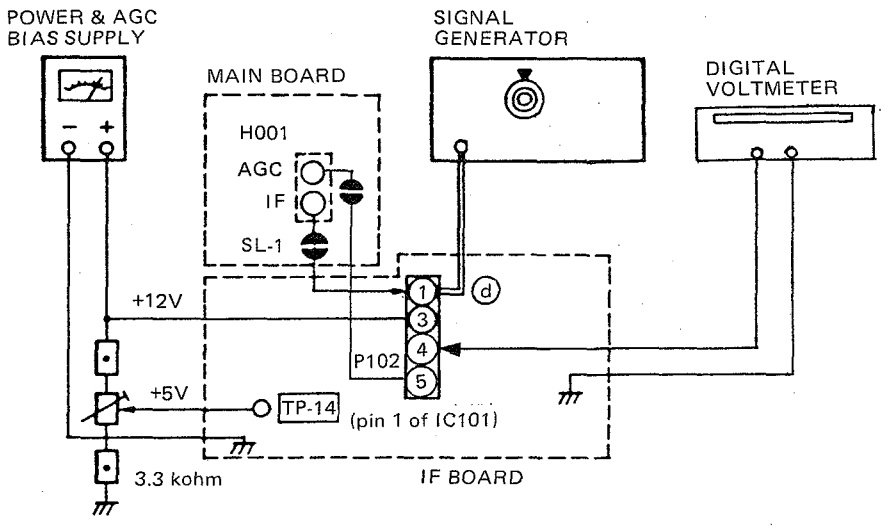


Figure 14. Picture IF Sweep Alignment

STEP	SIGNAL GENERATOR	ADJUST	REMARKS
1. AFC Balance	NO SIGNAL	R152	• Short the pin 1 of IC101 to ground. • Adjust R152 for 4.3±0.2V at pin 4 of P102. • After the adjustment, remove the shorting at pin 1 of IC101.
2. AFC Detector	38.0 MHz CARRIER WAVE 70 ~ 80 dB	L152	• Connect IF carrier wave (60 dBμ or more) to the point ⓓ in Figure 14. • Adjust L152 for 4.3±0.5V at pin 4 of P102.
After completing the above steps, disconnect the equipment and re-solder the solder links. Check AFC operation is normal. Readjust AGC DELAY control (R151) following DELAYED R-F AGC ADJUSTMENTS.			

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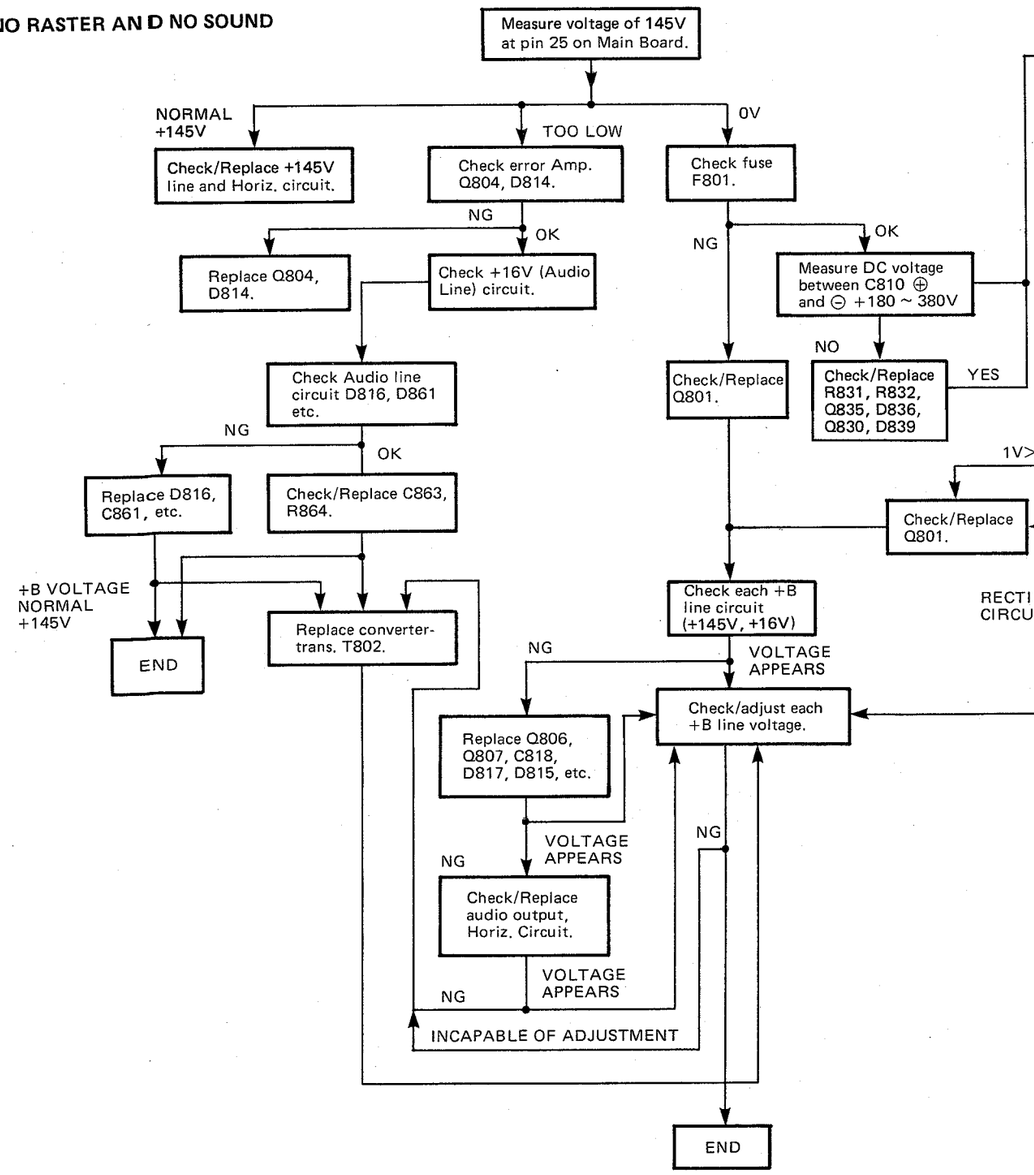
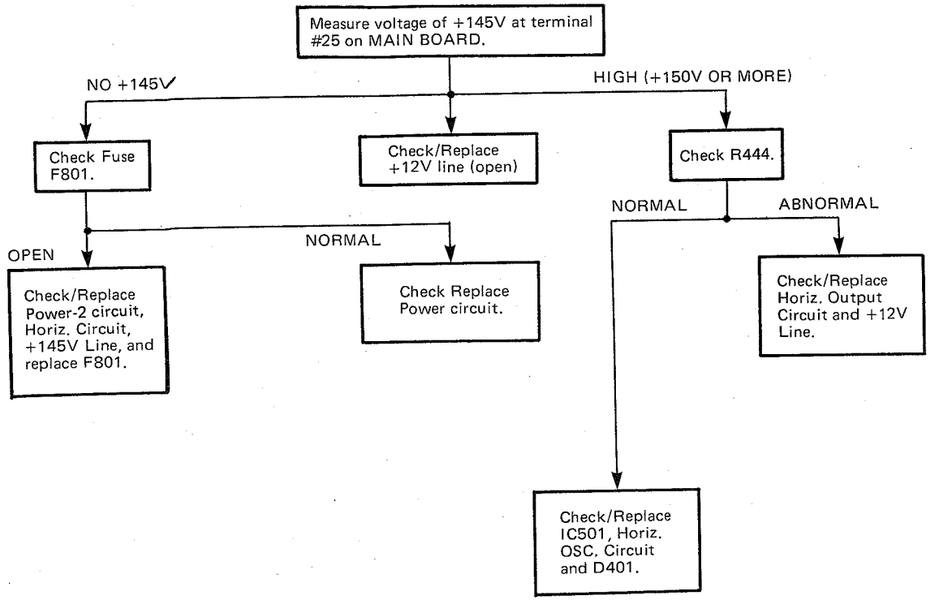
TROUBLESHOOTING CHARTS

The following charts are devoted to troublehsooting which, if followed carefully, will assist you in tracking down a fault to the correct stage.
In order to utilize the charts (fault trees), firstly establish the complaint, i.e. – No Raster, No Sound.
Locate the chart applicable and then progress through the various alternatives until a final block indicates the offending components or stage.

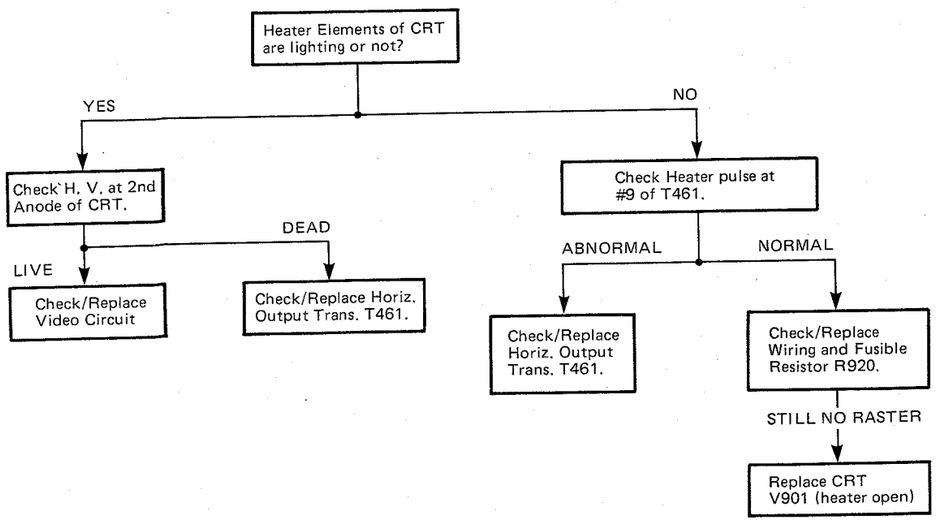
1. NO RASTER AND NO SOUND



2. NO RASTER (NOISE OR WEAK SOUND)

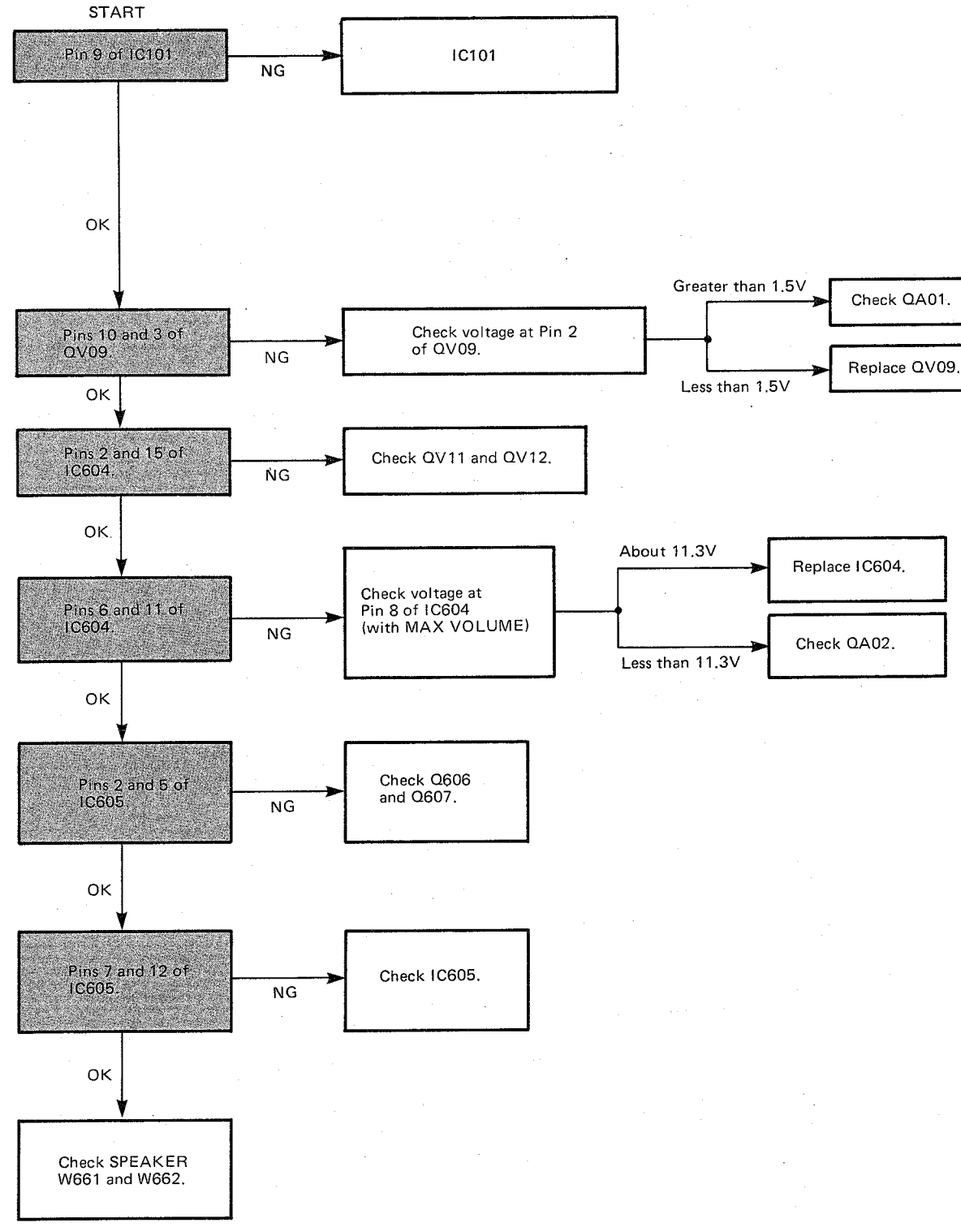

Measure voltage of +145V at terminal #25 on MAIN BOARD.
NO +145V
HIGH (+150V OR MORE)
Check Fuse F801.
Check/Replace +12V line (open)
Check R444.
OPEN
NORMAL
NORMAL
ABNORMAL
Check/Replace Power-2 circuit, Horiz. Circuit, +145V Line, and replace F801.
Check Replace Power circuit.
Check/Replace Horiz. Output Circuit and +12V Line.
Check/Replace IC501, Horiz. OSC. Circuit and D401.

3. NO RASTER (SOUND OK)



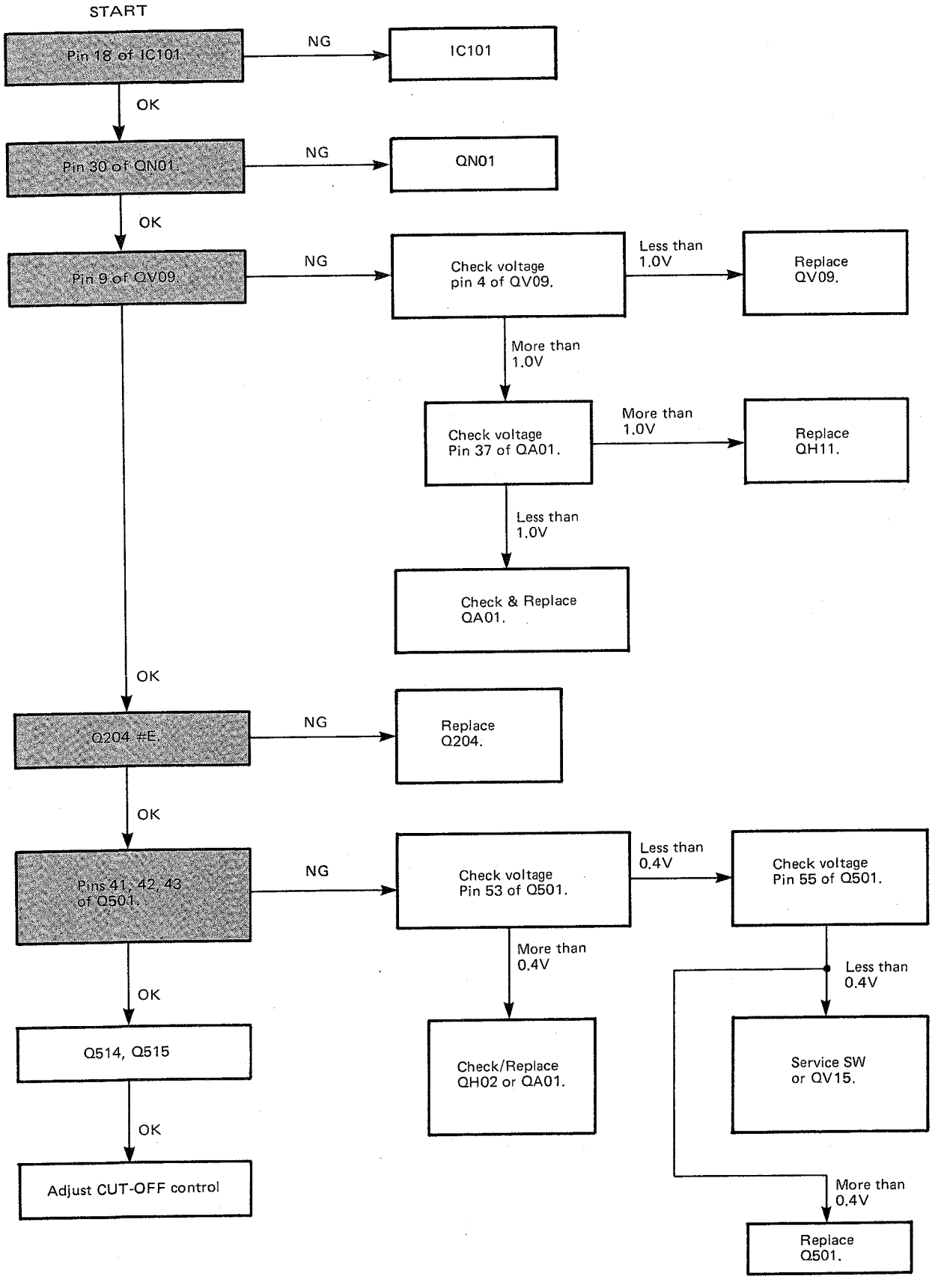
4. NO SOUND

NOTE: Check the sound signal waveform for shaded area below.



5. NO PICTURE

Check video signal waveform for shaded area below.



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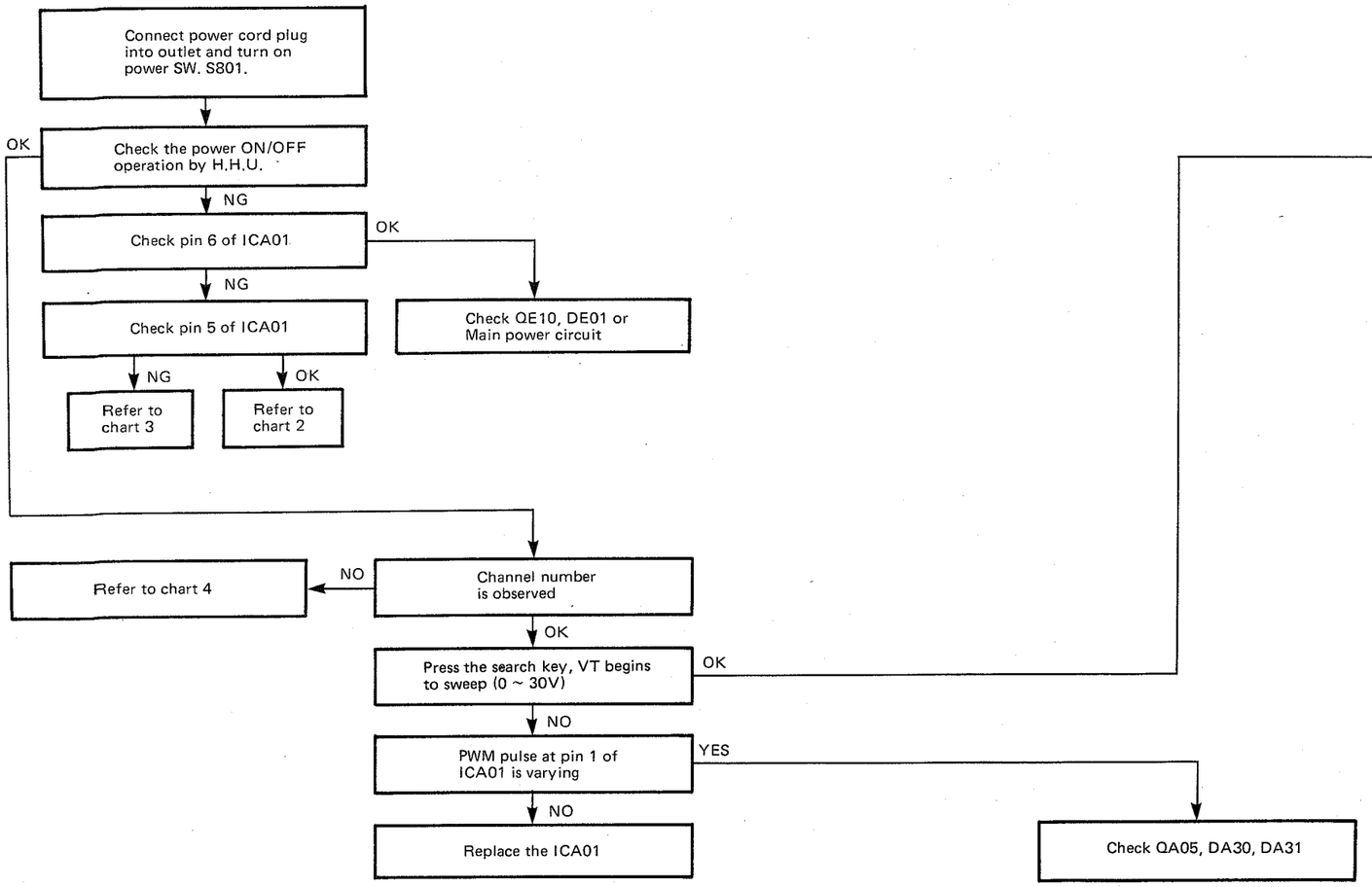
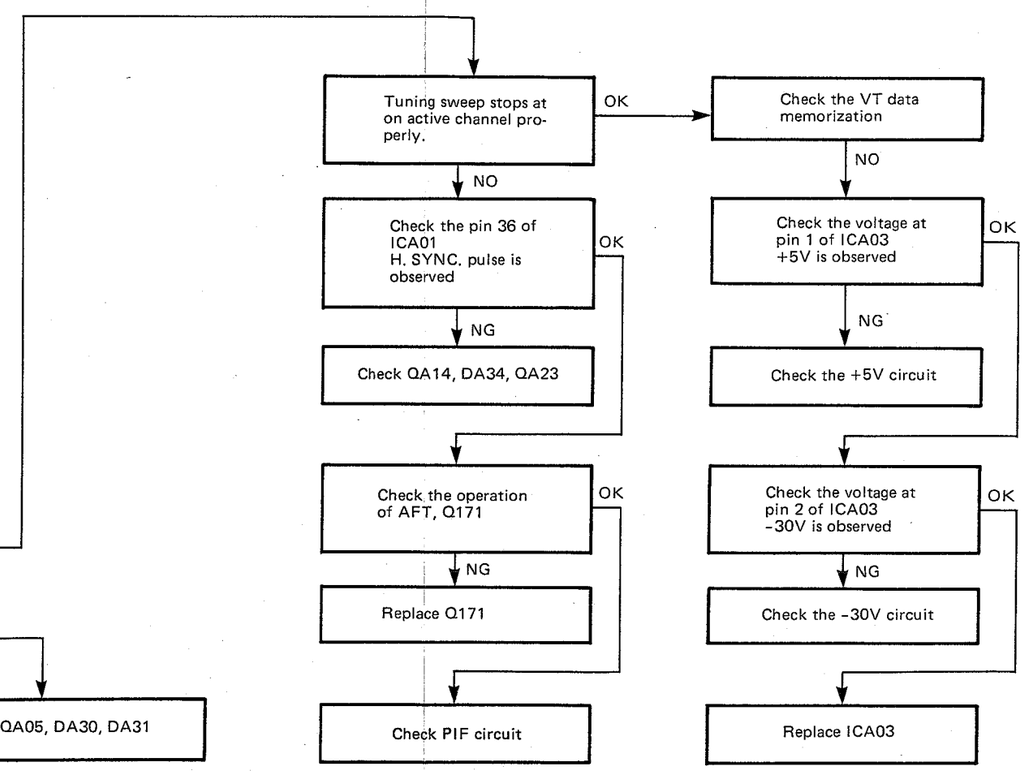
6. CHANNEL SELECTOR TROUBLE

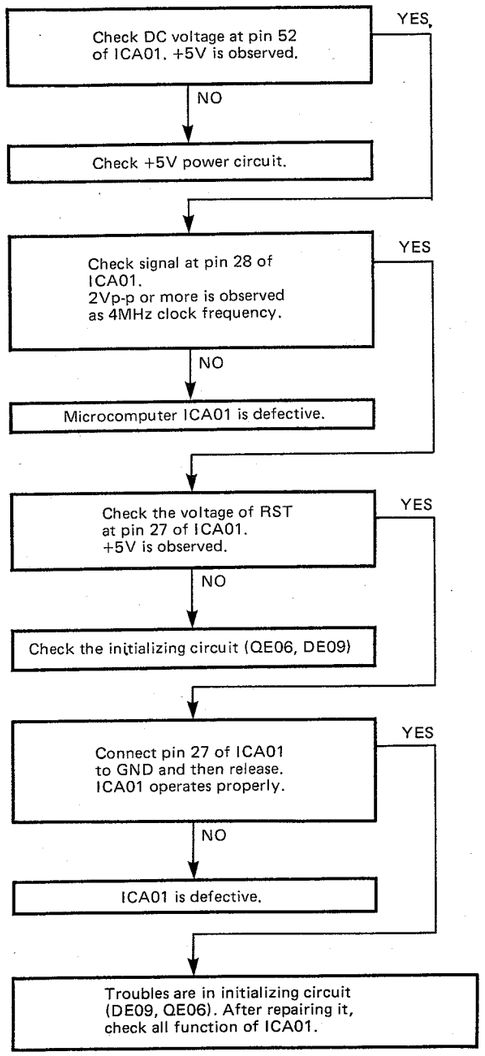
[CHART 1]





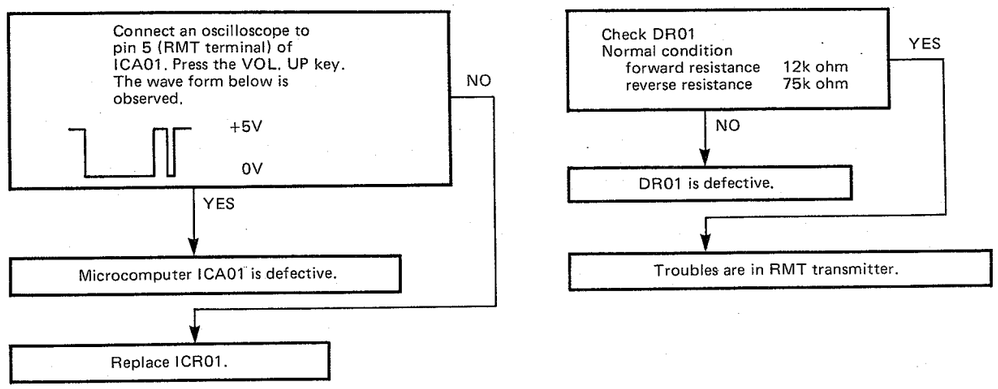
[CHART 2] Microcomputer (ICA01) Operation Check

Note: Before checking Microcomputer, check that control buttons and their connection work properly.


Check DC voltage at pin 52 of ICA01. +5V is observed.
YES
NO
Check +5V power circuit.
Check signal at pin 28 of ICA01. 2Vp-p or more is observed as 4MHz clock frequency.
YES
NO
Microcomputer ICA01 is defective.
Check the voltage of RST at pin 27 of ICA01. +5V is observed.
YES
NO
Check the initializing circuit (QE06, DE09)
Connect pin 27 of ICA01 to GND and then release. ICA01 operates properly.
YES
NO
ICA01 is defective.
Troubles are in initializing circuit (DE09, QE06). After repairing it, check all function of ICA01.

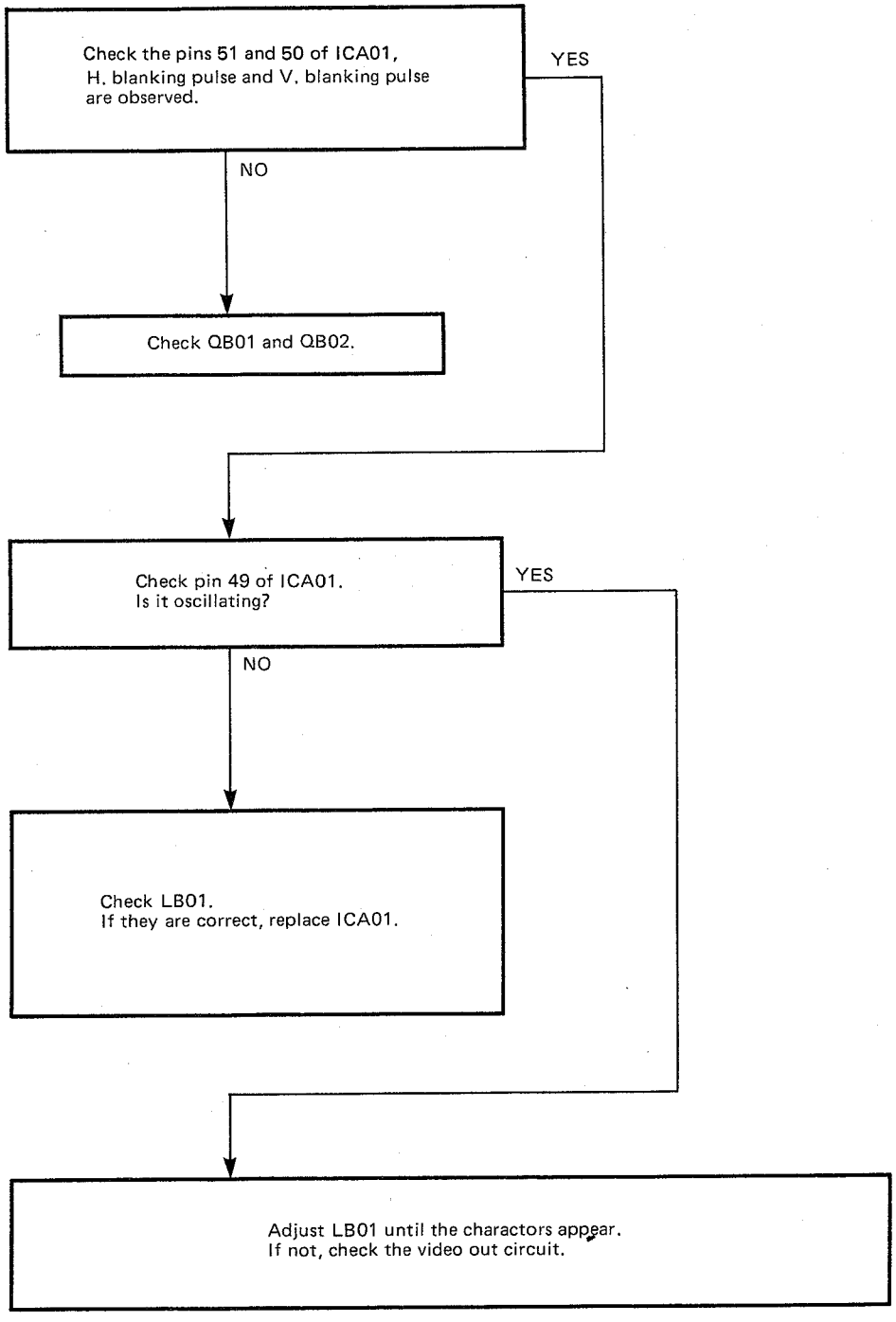
[CHART 3] Remote Control Operation Check

Note: Before checking RMT operation, check that key operation on TV set is proper.

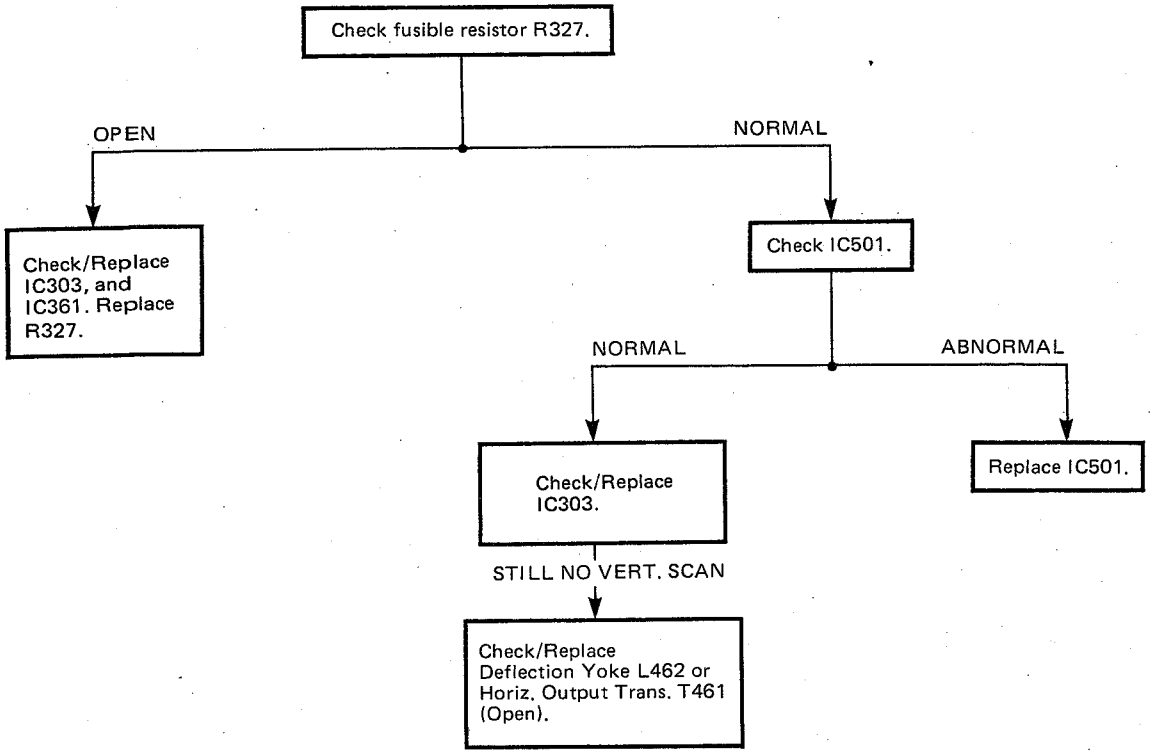


[CHART 4]

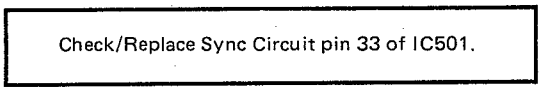
(1) On Screen Display Operation Check



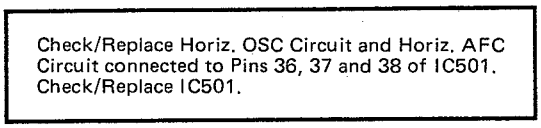
7. NO VERT. SCAN (ONE HORIZ. LINE RASTER)



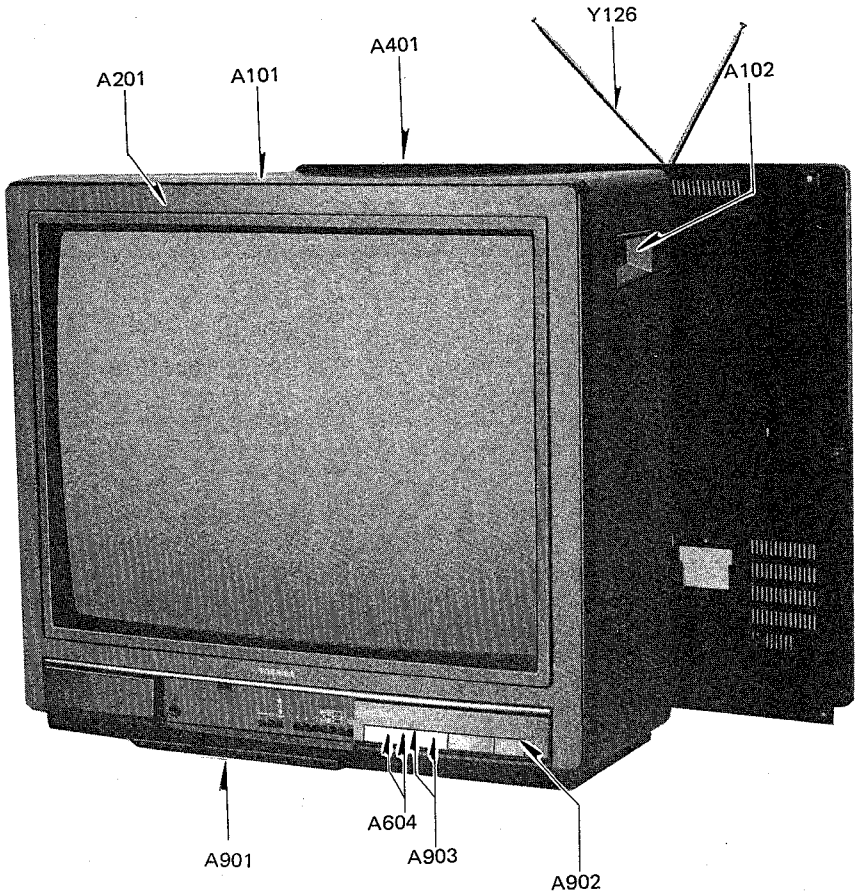
8. OUT OF VERT. SYNC. AND HORIZ. SYNC.



9. OUT OF HORIZ. SYNC.



CABINET REPLACEMENT PARTS LIST



Location No.	Part No.	Description
A101	23887435	Cabinet
A102	23805590	Handle
A201	23417649	Bezel
A401	23999357	Back Cover
A406	23293988	Adaptor, Aerial Matching
A501	23035420	Screw, BTB4X20SZN
A604	23874195	Knob, VOLUME
A701	23924167	Case
A702	23934752	Packing
A901	23999525	Door
A902	23874067	Knob, POWER
A903	23874065	Knob, CHANNEL
B120	23712306	Screw, PP3X.5X6SZN
Y101	23994271	Owner's Handbook
Y108	23122780	AC Adaptor
Y126	23124971	VHF Aerial, Telescopic

CHASSIS REPLACEMENT PARTS LIST

WARNING: BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" ON PAGE 2 OF THIS MANUAL.

CAUTION: The international hazard symbols in the schematic diagram and the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list. The mounting position of replacements is to be identical with originals. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE on page 2. Do not degrade the safety of the receiver through improper servicing.

NOTICE: The part number must be used when ordering parts, in order to assist in processing, be sure to include the Model number and Description.

ABBREVIATIONS:

Capacitors . . . . CD: Ceramic Disk, PF: Plastic Film, EL: Electrolytic
Resistors . . . . . CF: Carbon Film, CC: Carbon Composition, OMF: Oxide Metal Film, VR: Variable Resistor.
MF: Metal Film, FR: Fusible Resistor.
(All CD and PF capacitors are ±5%, 50v and all resistors, ±5%, 1/6w unless otherwise noted.)

Location No.	Part No.	Description
CAPACITORS		
C101	24212102	CD, 1000pF, ±10%
C102	24232103	CD, 0.01μF, +80%, −20%
C103	24232103	CD, 0.01μF, +80%, −20%
C104	24617969	EL, 0.22μF, ±20%, 50V
C105	24232103	CD, 0.01μF, +80%, −20%
C106	24232103	CD, 0.01μF, +80%, −20%
C107	24212102	CD, 1000pF, ±10%
C111	24797470	EL, 47μF, 50V
C112	24232103	CD, 0.01μF, +80%, −20%
C161	24212102	CD, 1000pF, ±10%
C162	24232103	CD, 0.01μF, +80%, −20%
C163	24212102	CD, 1000pF, ±10%
C171	24436240	CD, 24pF
C172	24212102	CD, 1000pF, ±10%
C173	24538104	PF, 0.1μF
C201	24206100	EL, 10μF, 50V
C202	24797101	EL, 100μF, 50V
C203	24232103	CD, 0.01μF, +80%, −20%
C204	24206100	EL, 10μF, 50V
C205	24206478	EL, 0.47μF, 50V
C208	24212102	CD, 1000pF, ±10%
C209	24232103	CD, 0.01μF, +80%, −20%
C210	24206100	EL, 10μF, 50V
C240	24206478	EL, 0.47μF, 50V
C241	24436181	CD, 180pF
C301	24206229	EL, 2.2μF, 50V
C302	24212152	CD, 1500pF, ±10%
C303	24617891	EL, 1μF, ±10%, 50V
C304	24212102	CD, 1000pF, ±10%
C306	24693563	PF, 0.056μF, 100V
C307	24232103	CD, 0.01μF, +80%, −20%
C311	24796222	EL, 2200μF, 35V
C314	24435510	CD, 51pF, 500V
C316	24796332	EL, 3300μF, 35V
C317	24617981	EL, 2.2μF, ±10%, 50V
C319	24693822	PF, 8200pF, 100V
C320	24214152	CD, 1500pF, ±10%, 500V
C323	24212332	CD, 3300pF, ±10%
C325	24796221	EL, 220μF, 35V
C326	24538563	PF, 0.056μF

Location No.	Part No.	Description
C327	24693393	PF, 0.039μF, 100V
C328	24214222	CD, 2200pF, ±10%, 500V
C361	24640931	EL, 10μF, ±20%, 100V
C362	24593912	PF, 9100pF
C363	24591682	PF, 6800pF
C364	24212471	CD, 470pF, ±10%
C365	24538474	PF, 0.47μF
C366	24593472	PF, 4700pF
C368	24538104	PF, 0.1μF
C369	24593562	PF, 5600pF
C403	24206479	EL, 4.7μF, 50V
C405	24593203	PF, 0.02μF
C406	24593203	PF, 0.02μF
C407	24593303	PF, 0.03μF
C408	24203101	EL, 100μF, 16V
C409	24232103	CD, 0.01μF, +80%, −20%
C413	24593182	PF, 1800pF
C416	24214331	CD, 330pF, ±10%, 500V
C417	24214332	CD, 3300pF, ±10%, 500V
C418	24757101	EL, 100μF, 100V
C423	24794101	EL, 100μF, 16V
C424	24203470	EL, 47μF, 16V
C425	24203101	EL, 100μF, 16V
⚠ C440	24095919	PF, 6800pF, 1600V
C441	24214221	CD, 220pF, ±10%, 500V
C442	24095823	PF, 0.3μF, 200V
⚠ C443	24095919	PF, 6800pF, 1600V
C444	24829623	PF, 0.062μF, 400V
C445	24828473	PF, 0.047μF, 200V
C446	24640962	EL, 33μF, ±20%, 200V
C447	24640968	EL, 10μF, 400V
C448	24754222	EL, 2200μF, 25V
⚠ C463	24212222	CD, 2200pF, ±10%
⚠ C464	24442181	CD, 180pF, ±10%, 2kV
C501	24797220	EL, 22μF, 50V
C504	24353150	CD, 15pF
C505	24593273	PF, 0.027μF
C506	24593273	PF, 0.027μF
C507	24593103	PF, 0.01μF
C508	24085028	EL, 2.2μF, 25V, Non-Polar
C509	24353330	CD, 33pF

Location No.	Part No.	Description
C510	24232103	CD, 0.01μF, +80%, −20%
C511	24232103	CD, 0.01μF, +80%, −20%
C512	24353200	CD, 20pF
C513	24436181	CD, 180pF
C514	24436181	CD, 180pF
C515	24206010	EL, 1μF, 50V
C516	24538104	PF, 0.1μF
C517	24538104	PF, 0.1μF
C518	24232103	CD, 0.01μF, +80%, −20%
C519	24232103	CD, 0.01μF, +80%, −20%
C520	24206478	EL, 0.47μF, 50V
C521	24538474	PF, 0.47μF
C522	24538474	PF, 0.47μF
C523	24538474	PF, 0.47μF
C524	24232103	CD, 0.01μF, +80%, −20%
C525	24436820	CD, 82pF
C526	24436820	CD, 82pF
C527	24436820	CD, 82pF
C529	24353300	CD, 30pF
C531	24538104	PF, 0.1μF
C532	24436360	CD, 36pF
C535	24206100	EL, 10μF, 50V
C536	24206478	EL, 0.47μF, 50V
C537	24203101	EL, 100μF, 16V
C539	24232103	CD, 0.01μF, +80%, −20%
C601	24436470	CD, 47pF
C602	24436470	CD, 47pF
C603	24232103	CD, 0.01μF, +80%, −20%
C604	24212272	CD, 2700pF, ±10%
C605	24232103	CD, 0.01μF, +80%, −20%
C606	24232103	CD, 0.01μF, +80%, −20%
C607	24436470	CD, 47pF
C609	24232103	CD, 0.01μF, +80%, −20%
C610	24797470	EL, 47μF, 50V
C611	24436470	CD, 47pF
C612	24436510	CD, 51pF
C620	24206479	EL, 4.7μF, 50V
C625	24795102	EL, 1000pF, 25V
C626	24795101	EL, 100μF, 25V
C627	24795470	EL, 47μF, 25V
C628	24204470	EL, 47μF, 25V
C629	24795101	EL, 100μF, 25V
C631	24538563	PF, 0.056μF
C632	24591473	PF, 0.047μF
C633	24591473	PF, 0.047μF
C634	24795102	EL, 1000pF, 25V
C636	24795101	EL, 100μF, 25V
C638	24206229	EL, 2.2μF
C642	24206479	EL, 4.7μF, 50V
C644	24203470	EL, 47μF, 16V
C646	24232103	CD, 0.01μF, +80%, −20%
C671	24232103	CD, 0.01μF, +80%, −20%
C672	24232103	CD, 0.01μF, +80%, −20%
C673	24436471	CD, 470pF
C674	24436471	CD, 470pF
C675	24359680	CD, 68pF
C676	24436220	CD, 22pF
C677	24206010	EL, 1μF, 50V
C678	24359680	CD, 68pF
C679	24232103	CD, 0.01μF, +80%, −20%
C801	24095951	PF, 0.1μF, ±20%, AC250V
C802	24095951	PF, 0.1μF, ±20%, AC250V
⚠ C803	24094653	CD, 220pF, ±20%, AC400V
⚠ C804	24094653	CD, 220pF, ±20%, AC400V

Location No.	Part No.	Description
⚠ C805	24086909	EL, 560pF, 400V
C806	24538474	PF, 0.47μF
⚠ C807	24094653	CD, 220pF, ±20%, AC400V
C809	24095931	PF, 2200pF, 1600V
C811	24538474	PF, 0.47μF
C812	24756010	EL, 1μF, 50V
C813	24598242	PF, 2400pF
C814	24212102	CD, 1000pF, ±10%
C815	24756479	EL, 4.7μF, 50V
C816	24643100	EL, 10μF, 200V
C818	24086945	EL, 330μF, ±20%, 200V
C819	24214331	CD, 330pF, ±10%, 500V
C820	24796222	EL, 2200μF, 35V
C821	24630960	EL, 47μF, ±20%, 25V
C822	24442181	CD, 180pF, ±10%, 2kV
C825	24593303	PF, 0.03μF
C826	24756470	EL, 47μF, 50V
C827	24094654	CD, 470pF, ±20%, AC400V
C828	24094654	CD, 470pF, ±20%, AC400V
C829	24442181	CD, 180pF, ±10%, 2kV
⚠ C831	24094906	CD, 4700pF, +80%, −20%, AC250V
⚠ C832	24094906	CD, 4700pF, +80%, −20%, AC250V
⚠ C833	24094906	CD, 4700pF, +80%, −20%, AC250V
⚠ C834	24094906	CD, 4700pF, +80%, −20%, AC250V
⚠ C835	24086879	EL, 470μF, ±20%, 200V
C836	24094905	CD, 0.01μF, +80%, −20%, AC250V
C837	24232103	CD, 0.01μF, +80%, −20%
C838	24206100	EL, 10μF, 50V
C839	24232103	CD, 0.01μF, +80%, −20%
⚠ C840	24640968	EL, 10μF, 400V
C860	24094653	CD, 220pF, ±20%, AC400V
C861	24796222	EL, 2200μF, 35V
C862(U902)	24094655	CD, 1000pF, ±20%, AC400V
C862(U903D)	24442331	CD, 330pF, ±10%, 2kV
C863	24212102	CD, 1000pF, ±10%
C901	24640987	EL, 2.2μF, 350V
C902	24095981	PF, 2200pF, 1600V
CA01	24203470	EL, 47μF, 16V
CA02	24232103	CD, 0.01μF, +80%, −20%
CA03	24203100	EL, 10μF, 16V
CA04	24436300	CD, 30pF
CA05	24436300	CD, 30pF
CA06	24232103	CD, 0.01μF, +80%, −20%
CA07	24203100	EL, 10μF, 16V
CA08	24206100	EL, 10μF, 50V
CA09	24436391	CD, 390pF
CA10	24436221	CD, 220pF
CA11	24538104	PF, 0.1μF
CA12	24538104	PF, 0.1μF
CA15	24206229	EL, 2.2μF, 50V
CA16	24206229	EL, 2.2μF, 50V
CA17	24538104	PF, 0.1μF
CA18	24206229	EL, 2.2μF, 50V
CA19	24232103	CD, 0.01μF, +80%, −20%
CA22	24432561	CD, 560pF, ±10%
CA23	24212222	CD, 2200pF, ±10%
CA25	24206010	EL, 1μF, 50V
CA28	24212102	CD, 1000pF, ±10%
CA29	24432101	CD, 100pF, ±10%

Location No.	Part No.	Description
CA30	24432101	CD, 100pF, ±10%
CA31	24432101	CD, 100pF, ±10%
CA32	24232103	CD, 0.01μF, +80%, −20%
CA33	24432101	CD, 100pF, ±10%
CA34	24232103	CD, 0.01μF, +80%, −20%
CA35	24436561	CD, 560pF
CA36	24203101	EL, 100μF, 16V
CB01	24232103	CD, 0.01μF, +80%, −20%
CB02	24436101	CD, 100pF
CB03	24436101	CD, 100pF
CE03	24591103	PF, 0.01μF
CE05	24206100	EL, 10μF, 50V
CE06	24796471	EL, 470μF, 35V
CE07	24794331	EL, 330μF, 16V
CE08	24203100	EL, 10μF, 16V
CE09	24797470	EL, 47μF, 50V
CE10	24756100	EL, 10μF, 50V
CE15	24442101	CD, 100pF, ±10%, 2kV
CE16	24206229	EL, 2.2μF
CM01	24436201	CD, 200pF
CM02	24436201	CD, 200pF
CM03	24340080	CD, 8pF, ±0.25pF
CM04	24340080	CD, 8pF, ±0.25pF
CM05	24232103	CD, 0.01μF, +80%, −20%
CM06	24357270	CD, 27pF
CM07	24593273	PF, 0.027μF
CM08	24232103	CD, 0.01μF, +80%, −20%
CM09	24232103	CD, 0.01μF, +80%, −20%
CN02	24353510	CD, 51pF
CN04	24232103	CD, 0.01μF, +80%, −20%
CN05	24203470	EL, 47μF, 16V
CN08	24232103	CD, 0.01μF, +80%, −20%
CN09	24232103	CD, 0.01μF, +80%, −20%
CN10	24436101	CD, 100pF
CN11	24436330	CD, 33pF
CN12	24436470	CD, 47pF
CN13	24232103	CD, 0.01μF, +80%, −20%
CN14	24436150	CD, 15pF
CN15	24436220	CD, 22pF
CN16	24232103	CD, 0.01μF, +80%, −20%
CN30	24232103	CD, 0.01μF, +80%, −20%
CN52	24093990	Variable Capacitor, 5.5 to 30pF, 100V
CR09	24203101	EL, 100μF, 16V
CR10	24203100	EL, 10μF, 16V
CS01	24232103	CD, 0.01μF, +80%, −20%
CS02	24797470	EL, 47μF, 50V
CV05	24206010	EL, 1μF, 50V
CV07	24206220	EL, 22μF, 50V
CV08	24206229	EL, 2.2μF
CV09	24794471	EL, 470μF, 16V
CV14	24232103	CD, 0.01μF, +80%, −20%
CV15	24203100	EL, 10μF, 16V
CV16	24232103	CD, 0.01μF, +80%, −20%
CV17	24794102	EL, 1000μF, 16V
CV18	24538224	PF, 0.22μF
CV19	24085988	EL, 1μF, ±20%, 50V, Non-Polar
CV20	24206010	EL, 1μF, 50V
CV21	24203100	EL, 10μF, 16V
CV23	24232103	CD, 0.01μF, +80%, −20%
CX01	24206100	EL, 10μF, 50V
CX02	24538104	PF, 0.1μF
CX03	24538104	PF, 0.1μF
CX04	24538104	PF, 0.1μF

RESISTORS

Location No.	Part No.	Description
R101	24366222	CF, 2200 ohm
R102	24366101	CF, 100 ohm
R103	24366152	CF, 1500 ohm
R104	24366272	CF, 2700 ohm
R105	24366104	CF, 100k ohm
R106	24366221	CF, 220 ohm
R107	24366682	CF, 6800 ohm
R108	24366222	CF, 2200 ohm
R109	24366332	CF, 3300 ohm
R151	24066953	VR, 5k ohm, 1/10W
R152	24066946	VR, 1M ohm, 1/10W
R161	24366131	CF, 130 ohm
R162	24366102	CF, 1k ohm
R163	24366562	CF, 5600 ohm
R164	24552221	OMF, 220 ohm, 1/2W
R165	24366471	CF, 470 ohm
R166	24366270	CF, 27 ohm
R167	24366680	CF, 68 ohm
R171	24366102	CF, 1k ohm
R172	24366394	CF, 390k ohm
R173	24366102	CF, 1k ohm
R201	24366821	CF, 820 ohm
R202	24366182	CF, 1800 ohm
R203	24366271	CF, 270 ohm
R207	24366272	CF, 2700 ohm
R208	24366101	CF, 100 ohm
R209	24366103	CF, 10k ohm
R210	24366203	CF, 20k ohm
R211	24366622	CF, 6200 ohm
R212	24366103	CF, 10k ohm
R213	24366101	CF, 100 ohm
R214	24366222	CF, 2200 ohm
R215	24366222	CF, 2200 ohm
R216	24366133	CF, 13k ohm
R217	24366101	CF, 100 ohm
R218	24366222	CF, 2200 ohm
R219	24366103	CF, 10k ohm
R220(U101)	24552331	OMF, 330 ohm, 1/2W
R220(U902)	24366202	CF, 2k ohm
R221	24366221	CF, 220 ohm
R222	24360821	CF, 820 ohm, 1/8W
R223	24360822	CF, 8200 ohm, 1/8W
R225	24366103	CF, 10k ohm
R240	24366683	CF, 68k ohm
R241	24366563	CF, 56k ohm
R252	24061591	VR, 2k ohm, 1/8W
R253	24061591	VR, 2k ohm, 1/8W
R255	24061589	VR, 10k ohm, 1/8W
R301	24366301	CF, 300 ohm
R302	24366244	CF, 240k ohm
R303	24366433	CF, 43k ohm
R304	24366102	CF, 1k ohm
R305	24366161	CF, 160 ohm
R306	24366203	CF, 20k ohm
R307(U101)	24366103	CF, 100 ohm
R307(U902)	24366101	CF, 100 ohm
R308	24366472	CF, 4700 ohm
R311	24552242	OMF, 2400 ohm, 1/2W
R312	24366113	CF, 11k ohm
R313	24366514	CF, 510k ohm
R318	24366102	CF, 1k ohm

Location No.	Part No.	Description
R319	24366621	CF, 620 ohm
R320	24366102	CF, 1k ohm
R321	24552102	OMF, 1k ohm, 1/2W
R322	24552102	OMF, 1k ohm, 1/2W
R323	24323828	OMF, 0.82 ohm, 2W
R325	24366133	CF, 13k ohm
R327	24547569	FR, 5.6 ohm, 1W
R328	24552111	OMF, 110 ohm, 1/2W
R351	24066937	VR, 50k ohm, 1/10W
R356	24061589	VR, 10k ohm, 1/8W
R357	24061585	VR, 200k ohm, 1/8W
R358	24061592	VR, 1k ohm, 1/8W
R361	24360623	CF, 62k ohm, 1/8W
R362	24360243	CF, 24k ohm, 1/8W
R363	24360103	CF, 10k ohm, 1/8W
R364	24360273	CF, 27k ohm, 1/8W
R366	24360133	CF, 13k ohm, 1/8W
R367	24360183	CF, 18k ohm, 1/8W
R368	24360302	CF, 3k ohm, 1/8W
R369	24552752	OMF, 7500 ohm, 1/2W
R370	24380752	CF, 7500 ohm, 1/8W
R371	24360103	CF, 10k ohm, 1/8W
R372	24360333	CF, 33k ohm, 1/8W
R373	24360103	CF, 10k ohm, 1/8W
R374	24360472	CF, 4700 ohm, 1/8W
R375	24360273	CF, 27k ohm, 1/8W
R377	24360473	CF, 47k ohm, 1/8W
R378	24360133	CF, 13k ohm, 1/8W
R379	24360432	CF, 4300 ohm, 1/8W
R380	24360623	CF, 62k ohm, 1/8W
R381	24360681	CF, 680 ohm, 1/8W
R382	24360103	CF, 10k ohm, 1/8W
R383	24941335	CC, 3.3M ohm, 1/4W
R384	24360104	CF, 100k ohm, 1/8W
R385	24360224	CF, 220k ohm, 1/8W
R403	24366162	CF, 1600 ohm
R405	24366511	CF, 510 ohm
R406	24366131	CF, 130 ohm
R407	24366201	CF, 200 ohm
R408	24366562	CF, 5600 ohm
R409	24366103	CF, 10k ohm
R410	24552432	OMF, 4300 ohm, 1/2W
R411	24366301	CF, 300 ohm
R412	24366241	CF, 240 ohm
R413	24384822	OMF, 8200 ohm, 3W
R415	24383123	OMF, 12k ohm, 2W
R416	24383123	OMF, 12k ohm, 2W
R417	24383123	OMF, 12k ohm, 2W
R418	24553242	OMF, 2400 ohm, 1W
R419	24942390	CC, 39 ohm, 1/2W
R421	24553102	OMF, 1k ohm, 1W
R423	24552221	OMF, 220 ohm, 1/2W
R425	24553151	OMF, 150 ohm, 1W
R440	24366103	CF, 10k ohm
R441	24366103	CF, 10k ohm
R443	24322109	OMF, 1 ohm, 1W
R444	24323828	OMF, 0.82 ohm, 2W
R448	24558279	FR, 2.7 ohm, ±10%, 2W
R451	24066938	VR, 20k ohm, 1/10W
R460	24552161	OMF, 160 ohm, 1/2W
R502	24366334	CF, 330k ohm
R503	24366202	CF, 2k ohm
R504	24366391	CF, 390 ohm
R505	24366822	CF, 8200 ohm

Location No.	Part No.	Description
R506	24366561	CF, 560 ohm
R507	24366822	CF, 8200 ohm
R508	24366561	CF, 560 ohm
R509	24366203	CF, 20k ohm
R510	24366101	CF, 100 ohm
R511	24366562	CF, 5600 ohm
R512	24366152	CF, 1500 ohm
R513	24366152	CF, 1500 ohm
R515	24366221	CF, 220 ohm
R516	24366221	CF, 220 ohm
R517	24366221	CF, 220 ohm
R518	24945475	CC, 4.7M ohm, ±10%, 1/4W
R519	24366103	CF, 10k ohm
R520	24366332	CF, 3300 ohm
R521	24366102	CF, 1k ohm
R522	24945475	CC, 4.7M ohm, ±10%, 1/4W
R531	24366102	CF, 1k ohm
R532	24366222	CF, 2200 ohm
R533	24366102	CF, 1k ohm
R534	24376104	CF, 100k ohm, 1/2W
R535	24366222	CF, 2200 ohm
R536	24376104	CF, 100k ohm, 1/2W
R537	24366132	CF, 1300 ohm
R538	24366242	CF, 2400 ohm
R539	24366132	CF, 1300 ohm
R540	24376104	CF, 100k ohm, 1/2W
R541	24366821	CF, 820 ohm
R542	24366271	CF, 270 ohm
R543	24366103	CF, 10k ohm
R544	24366101	CF, 100 ohm
R547	24366471	CF, 470 ohm
R548	24366471	CF, 470 ohm
R549	24366471	CF, 470 ohm
R551	24066955	VR, 1k ohm, 1/10W
R557	24061591	VR, 2k ohm, 1/8W
R558	24061591	VR, 2k ohm, 1/8W
R559	24061591	VR, 2k ohm, 1/8W
R560	24366822	CF, 8200 ohm
R561	24366822	CF, 8200 ohm
R562	24366822	CF, 8200 ohm
R563	24366104	CF, 100k ohm
R591	24383153	OMF, 15k ohm, 2W
R592	24383153	OMF, 15k ohm, 2W
R593	24383153	OMF, 15k ohm, 2W
R601	24366681	CF, 680 ohm
R602	24366103	CF, 10k ohm
R603	24366103	CF, 10k ohm
R604	24366222	CF, 2200 ohm
R605	24366103	CF, 10k ohm
R606	24366223	CF, 22k ohm
R607	24366471	CF, 470 ohm
R608	24366103	CF, 10k ohm
R609	24366133	CF, 13k ohm
R610	24366103	CF, 10k ohm
R626	24366333	CF, 33k ohm
R635	24366331	CF, 330 ohm
R638	24366103	CF, 10k ohm
R639	24366103	CF, 10k ohm
R640	24366473	CF, 47k ohm
R642	24547569	FR, 5.6 ohm, 1W
R643	24321229	OMF, 2.2 ohm, 1/2W
R644	24321229	OMF, 2.2 ohm, 1/2W
R666	24946331	CC, 330 ohm, ±10%, 1/2W
R668	24366103	CF, 10k ohm

Location No.	Part No.	Description
R671	24366272	CF, 2700 ohm
R672	24366152	CF, 1500 ohm
R673	24366222	CF, 2200 ohm
R674	24366821	CF, 820 ohm
R675	24366272	CF, 2700 ohm
R676	24366105	CF, 1M ohm
R678	24366152	CF, 1500 ohm
R688	24366561	CF, 560 ohm
R689	24366102	CF, 1k ohm
R690	24366102	CF, 1k ohm
R696	24360124	CF, 120k ohm, 1/8W
R697	24366103	CF, 10k ohm
R698	24366473	CF, 47k ohm
R699	24366104	CF, 100k ohm
R802	24007938	Cement, 180 ohm, 15W
R803	24965563	OMF, 56k ohm, 3W
R804	24552362	OMF, 3600 ohm, 1/2W
R805	24007771	Cement, 10 ohm, 10W
R806	24366361	CF, 360 ohm
R807	24366100	CF, 10 ohm
R808	24321478	OMF, 0.47 ohm, 1/2W
R809	24366361	CF, 360 ohm
R810	24327164	MF, 160k ohm, ±1%, 1/4W
R811	24327184	MF, 180k ohm, ±1%, 1/4W
R812	24553202	OMF, 2k ohm, 1W
R813	24366393	CF, 39k ohm
R814	24327561	MF, 560 ohm, ±1%, 1/4W
R815	24366622	CF, 6200 ohm
R816	24366112	CF, 1100 ohm
R817	24003987	MF, 1k ohm, ±2%, 1/4W
R818	24327202	MF, 2k ohm, ±1%, 1/4W
R819	24552470	OMF, 47 ohm, 1/2W
R820(U903)	24531220	FR, 22 ohm, 1/2W
R820(U903D)	24002998	CC, 3.6M ohm, ±10%
R823	24366100	CF, 10 ohm
R824	24366472	CF, 4700 ohm
R825	24366102	CF, 1k ohm
R827	24531222	OMF, 2200 ohm, 1/2W
R828	24377154	CF, 150k ohm, 1W
R831	24007874	Cement, 1 ohm, 15W
R832	24007885	Cement, 2.2 ohm, 10W
R833(U801)	24382513	OMF, 51k ohm, 1W
R833(U903)	24321228	OMF, 0.22 ohm, 1/2W
R834	24382473	OMF, 47k ohm, 1W
R835	24360153	CF, 15k ohm, 1/8W
R836	24360242	CF, 2400 ohm, 1/8W
R837	24360560	CF, 56 ohm, 1/8W
R838	24360102	CF, 1k ohm, 1/8W
R839	24555183	OMF, 18k ohm, 3W
R841	24360431	CF, 430 ohm, 1/8W
R842	24360331	CF, 330 ohm, 1/8W
R843	24942101	CC, 100 ohm, 1/2W
R850	24066926	VR, 10k ohm, 1/10W
R851	24066917	VR, 500 ohm, 1/10W
R860	24942565	CC, 5.6M ohm, 1/2W
R861	24383361	OMF, 360 ohm, 2W
R862	24383361	OMF, 360 ohm, 2W
R865	24383621	OMF, 620 ohm, 2W
⚠ R890	24000875	PTC Thermistor, 18 ohm, ±20%, 290V
R901	24946272	CC, 2700 ohm, ±10%, 1/2W
R902	24946272	CC, 2700 ohm, ±10%, 1/2W
R903	24946272	CC, 2700 ohm, ±10%, 1/2W
R920	24000818	FR, 5.6 ohm, 1W

Location No.	Part No.	Description
RA01	24366472	CF, 4700 ohm
RA02	24366472	CF, 4700 ohm
RA05	24366102	CF, 1k ohm
RA06	24366102	CF, 1k ohm
RA10	24366102	CF, 1k ohm
RA11	24366102	CF, 1k ohm
RA12	24366102	CF, 1k ohm
RA13	24366102	CF, 1k ohm
RA14	24366103	CF, 10k ohm
RA15	24366103	CF, 10k ohm
RA16	24366102	CF, 1k ohm
RA17	24366102	CF, 1k ohm
RA18	24366102	CF, 1k ohm
RA19	24366102	CF, 1k ohm
RA21	24366102	CF, 1k ohm
RA23	24366102	CF, 1k ohm
RA25	24366102	CF, 1k ohm
RA26	24366104	CF, 100k ohm
RA27	24366102	CF, 1k ohm
RA28	24366103	CF, 10k ohm
RA29	24366434	CF, 430k ohm
RA30	24366223	CF, 22k ohm
RA31	24366272	CF, 2700 ohm
RA32	24366102	CF, 1k ohm
RA36	24366473	CF, 47k ohm
RA37	24366103	CF, 10k ohm
RA38	24366104	CF, 100k ohm
RA39	24366163	CF, 16k ohm
RA42	24366102	CF, 1k ohm
RA43	24366223	CF, 22k ohm
RA44	24366102	CF, 1k ohm
RA46	24366102	CF, 1k ohm
RA47	24366102	CF, 1k ohm
RA48	24366102	CF, 1k ohm
RA49	24366102	CF, 1k ohm
RA53	24383183	OMF, 18k ohm, 2W
RA54	24366102	CF, 1k ohm
RA55	24366223	CF, 22k ohm
RA56	24366333	CF, 33k ohm
RA57	24366333	CF, 33k ohm
RA58	24366333	CF, 33k ohm
RA59	24366333	CF, 33k ohm
RA63	24945565	CC, 5.6M ohm, ±10%, 1/4W
RA64	24945565	CC, 5.6M ohm, ±10%, 1/4W
RA65	24945565	CC, 5.6M ohm, ±10%, 1/4W
RA66	24945565	CC, 5.6M ohm, ±10%, 1/4W
RA69	24366362	CF, 3600 ohm
RA76	24366153	CF, 15k ohm
RA83	24360431	CF, 430 ohm
RA92	24360225	CF, 2.2M ohm, 1/8W
RA94	24366102	CF, 1k ohm
RA97	24383223	OMF, 22k ohm, 2W
RA98	24366102	CF, 1k ohm
RB01	24366472	CF, 4700 ohm
RB02	24366302	CF, 3k ohm
RB03	24366103	CF, 10k ohm
RB04	24366103	CF, 10k ohm
RB05	24366302	CF, 3k ohm
RB06	24366562	CF, 5600 ohm
RB10	24366102	CF, 1k ohm
RB11	24366102	CF, 1k ohm
RB12	24366102	CF, 1k ohm
RB13	24366102	CF, 1k ohm
RB14	24366102	CF, 1k ohm

Location No.	Part No.	Description
RB15	24366102	CF, 1k ohm
RB20	24366223	CF, 22k ohm
RB21	24366333	CF, 33k ohm
RB22	24366363	CF, 36k ohm
RE02	24376913	CF, 91k ohm, 1/2W
RE03	24376913	CF, 91k ohm, 1/2W
RE04	24366223	CF, 22k ohm
RE05	24366103	CF, 10k ohm
RE06	24366222	CF, 2200 ohm
RE07	24366562	CF, 5600 ohm
RE08	24531391	FR, 390 ohm, 1/2W
RE09	24377224	CF, 220k ohm, 1W
RE12	24552391	OMF, 390 ohm, 1/2W
RE13	24366182	CF, 1800 ohm
RE14	24366222	CF, 2200 ohm
RE15	24383330	OMF, 33 ohm, 2W
RE16	24366821	CF, 820 ohm
RE17	24366221	CF, 220 ohm
RE18	24366472	CF, 4700 ohm
RE19	24554511	OMF, 510 ohm, 2W
RE21	24383472	OMF, 4700 ohm, 2W
RE22	24366681	CF, 680 ohm
RE24	24366103	CF, 10k ohm
RE25	24366201	CF, 200 ohm
RE26	24366561	CF, 560 ohm
RE27	24552102	OMF, 1k ohm, 1/2W
RE28	24553270	OMF, 27 ohm, 1W
RE29	24366103	CF, 10k ohm
RM03	24366272	CF, 2700 ohm
RM04	24366432	CF, 4300 ohm
RM05	24366221	CF, 220 ohm
RM06	24945475	CC, 4.7M ohm, ±10%, 1/4W
RM07	24360153	CF, 15k ohm, 1/8W
RM26	24366333	CF, 33k ohm
RN01	24366223	CF, 22k ohm
RN02	24366331	CF, 330 ohm
RN05	24366222	CF, 2200 ohm
RN06	24366103	CF, 10k ohm
RN07	24366103	CF, 10k ohm
RN08	24366562	CF, 5600 ohm
RN10	24552471	OMF, 470 ohm, 1/2W
RN12	24366272	CF, 2700 ohm
RN13	24366103	CF, 10k ohm
RN14	24366103	CF, 10k ohm
RN15	24366223	CF, 22k ohm
RN16	24366333	CF, 33k ohm
RN17	24366471	CF, 470 ohm
RN18	24366471	CF, 470 ohm
RN19	24366682	CF, 6800 ohm
RN20	24366392	CF, 3900 ohm
RN21	24366332	CF, 3300 ohm
RN22	24366333	CF, 33k ohm
RN24	24366103	CF, 10k ohm
RN25	24366304	CF, 300k ohm
RN26	24366103	CF, 10k ohm
RN27(U101)	24366103	CF, 10k ohm
RN27(U902)	24366333	CF, 33k ohm
RN28	24360205	CF, 2M ohm, 1/8W
RN29	24366152	CF, 1500 ohm
RN30	24366331	CF, 330 ohm
RR04	24552470	OMF, 47 ohm, 1/2W
RV05	24366102	CF, 1k ohm
RV06	24366430	CF, 43 ohm
RV09	24366122	CF, 1200 ohm

Location No.	Part No.	Description
RV10	24366102	CF, 1k ohm
RV23	24366102	CF, 1k ohm
RV24	24366473	CF, 47k ohm
RV27	24366620	CF, 62 ohm
RV34	24366392	CF, 3900 ohm
RV35	24552391	OMF, 390 ohm, 1/2W
RV37	24366101	CF, 100 ohm
RV38	24366101	CF, 100 ohm
RV44	24366103	CF, 10k ohm
RV46	24366472	CF, 4700 ohm
RV48	24366102	CF, 1k ohm
RV51	24366101	CF, 100 ohm
RV53	24366101	CF, 100 ohm
RV54	24552181	OMF, 180 ohm, 1/2W
RV55	24552181	OMF, 180 ohm, 1/2W
RV57	24366101	CF, 100 ohm
RV59	24366101	CF, 100 ohm
RV60	24366103	CF, 10k ohm
RV61	24366821	CF, 820 ohm
RV63	24366101	CF, 100 ohm
RV65	24366682	CF, 6800 ohm
RV68	24360394	CF, 390k ohm, 1/8W
RV69	24360333	CF, 33k ohm, 1/8W
RX02	24366102	CF, 1k ohm
RX03	24366221	CF, 220 ohm
RX04	24366101	CF, 100 ohm
RX05	24366101	CF, 100 ohm
RX06	24366221	CF, 220 ohm
RX08	24366101	CF, 100 ohm
RX09	24366221	CF, 220 ohm
RX10	24366101	CF, 100 ohm
RX13	24366102	CF, 1k ohm

COILS & TRANSFORMERS

L102	23262855	Coil, PIF, TRF1453
L105	23238928	Coil, Peaking, TRF4339AC
L106	23261051	Coil, RF Choke, AZ9246E
L151	23262813	Coil, IF Coil, TRF1077
L152	23262813	Coil, IF Coil, TRF1077
L161	23261982	Coil, RF Choke, TRF9224
L162	23201003	Coil, RF Choke, TRF9202A
L201	23238923	Coil, Peaking, TRF4829AC
L203	23237973	Coil, Peaking, TRF4151AC
L204	23238918	Coil, Peaking, TRF4220AC
L311	23261974	Coil (Ferrite Bead), HC5-035
L361	23221896	Coil, Choke, TLN3061
L362	23221895	Coil, Choke, TON3062
L411	23103940	Coil (Ferrite Bead), TEM2001
L412	23103940	Coil (Ferrite Bead), TEM2001
L441	23233027	Coil, Linerity, TLN2091
⚠ L462	23227446	Deflection Yoke, YS-55739
L503	23238923	Coil, Peaking, TRF4829AC
L551	23250972	Coil, 1H-Daly Matching, TRF5418
L601	23238921	Coil, Peaking, TRF4120AC
L603	23238918	Coil, Peaking, TRF4220AC
L651	23232946	Coil, Variable, TRF3073
L671	23232946	Coil, Variable, TRF3073
L672	23232946	Coil, Variable, TRF3073
L801	23221050	Coil, RF Choke, TLN1015
L802	23261975	Coil, RF Choke, TRF9229
L803	23222694	Coil, Width, TLN2026

Location No.	Part No.	Description
L806	23103981	Coil (Ferrite Bead), RH0630025
L807	23261975	Coil, RF Choke, TRF9229
L808	23222694	Coil, Width, TLN2026
L810	23103940	Coil (Ferrite Bead), TEM2001
⚠ L901	23200755	Coil, Degaussing, TSB2206A
LA01	23237999	Coil, Peaking, TRF4109AC
LA02	23221026	Coil, RF Choke, AZ-9004Y
LB01	23262778	Coil, IF Coil, TRF1112
LM01	23262797	Coil, IF Coil, TRF1093
LM02	23272988	Coil, Chroma Demod, TRF5414
LM03	23272988	Coil, Chroma Demod, TRF5414
LM04	23262798	Coil, IF Coil, TRF1092
LN01	23238920	Coil, Peaking, TRF4150AC
LN02	23238920	Coil, Peaking, TRF4150AC
LN03	23238918	Coil, Peaking, TRF4220AC
⚠ T401	23224978	Transformer, Horiz Drive, TLN1046
⚠ T461	23236076	Transformer, Flyback, TFB4062AD
T801	23211962	Line Filter, TRF3117
⚠ T802	23213624	Transformer, Converter, TPW3092
⚠ T803	23213623	Transformer, Converter, TPW3093
T804	23211921	Line Filter, TRF3126
TN01	23262910	Coil, PIF Trap, TRF1427-G
TN02	23262843	Coil, PIF Trap, TRF1457

SEMICONDUCTORS

IC101	23318201	IC, T51496P
IC303	23119142	IC, AN5521
IC361	23318052	IC, TDA8145
IC501	B0379160	IC, TA8616N
IC605	23118327	IC, AN7178
ICA01	23318141	IC, M50436-585SP
ICA02	23119182	IC, PD6336C
ICA03	23119101	IC, M58655P
ICA04	23119441	IC, LA7910
ICN01	B0379150	IC, TA8615N
ICV09	B0379280	IC, TA8628N
Q161	A6708871	Transistor, 2SC388ATM
Q171	A6317440	Transistor, 2SC1815-Y
Q201	A6534040	Transistor, 2SA1015-Y
Q204	A6317440	Transistor, 2SC1815-Y
Q205	A6509120	Transistor, 2SA562TM-O
Q303B	23035308	Screw, BTB3X8SZN
Q362	A6534040	Transistor, 2SA1015-Y
Q363	A6317440	Transistor, 2SC1815-Y
Q402	A678971D	Transistor, 2SC1569 FA-5
⚠ Q404	A6868953	Transistor, 2SD1432
Q405	A6842185	Transistor, 2SD553-Y
Q406	A671656A	Transistor, 2SC495-Y
Q505	A6319400	Transistor, 2SC-2068
Q506	A6317440	Transistor, 2SC1815-Y
Q508	A6319400	Transistor, 2SC-2068
Q509	A6317440	Transistor, 2SC1815-Y
Q511	A6319400	Transistor, 2SC-2068
Q512	A6317440	Transistor, 2SC1815-Y
Q514	A6509120	Transistor, 2SA562TM-O

Location No.	Part No.	Description
Q515	A6317440	Transistor, 2SC1815-Y
Q608	A6534040	Transistor, 2SA1015-Y
Q610	A6317440	Transistor, 2SC1815-Y
Q671	A6317440	Transistor, 2SC1815-Y
Q672	A6317440	Transistor, 2SC1815-Y
Q673	A6317440	Transistor, 2SC1815-Y
⚠ Q801	A6865553	Transistor, 2SD1279
Q801J	23035306	Screw, BTB3X6SZN
Q802	A6533730	Transistor, 2SA1012-Y
Q803	A6319280	Transistor, 2SC1959-O
Q804	A6534040	Transistor, 2SA1015-Y
⚠ Q805	A7800720	Transistor, SF0R1B41
Q806	A6546025	Transistor, 2SA1265N FA-1
Q807	A6325020	Transistor, 2SC2230-GR
Q830	A6317440	Transistor, 2SC1815-Y
⚠ Q835	A7804500	SCR, SF5J42
QA05	A6317440	Transistor, 2SC1815-Y
QA14	A6317440	Transistor, 2SC1815-Y
QA22	A6317440	Transistor, 2SC1815-Y
QA23	A6317440	Transistor, 2SC1815-Y
QA24	A6534040	Transistor, 2SA1015-Y
QA25	A6534040	Transistor, 2SA1015-Y
QB01	A6317440	Transistor, 2SC1815-Y
QB02	A6317440	Transistor, 2SC1815-Y
QB10	A6317440	Transistor, 2SC1815-Y
QE01	A6317440	Transistor, 2SC1815-Y
QE02	A6317440	Transistor, 2SC1815-Y
QE03	A6333320	Transistor, 2SC2655-Y
QE04	A6357856	Transistor, 2SC3148 FA-1
QE06	A6534040	Transistor, 2SA1015-Y
QE07	A6532940	Transistor, 2SA950-Y
QE08	A6314440	Transistor, 2SC1627-Y
QE09	A6532940	Transistor, 2SA950-Y
QE10	A6534040	Transistor, 2SA1015-Y
QN01	A6317440	Transistor, 2SC1815-Y
QN02	A6534040	Transistor, 2SA1015-Y
QN03	A6534040	Transistor, 2SA1015-Y
QN04	A6317440	Transistor, 2SC1815-Y
QN05	A6317440	Transistor, 2SC1815-Y
QN06	A6317440	Transistor, 2SC1815-Y
QN07	A6317440	Transistor, 2SC1815-Y
QV04	A6534040	Transistor, 2SA1015-Y
QV05	A6534040	Transistor, 2SA1015-Y
QV08	A6317440	Transistor, 2SC1815-Y
D240	A7150258	Diode, 1SS176
D241	A7150041	Diode, 1SS104
D242	A7246602	Diode, 1S1553 (TV)
D243	A7246711	Diode, 1S1555 (TV)
D301	A7150258	Diode, 1SS176
D302(U101)	A7150258	Diode, 1SS176
D302(U902)	A7568250	Diode, 1S1834
D303	23118977	Diode, ERC01-02FL
D315	A7110160	Diode, Zener, 05Z7.5Y
D361	A7110611	Diode, Zener, 05Z18Y
D362	A7246711	Diode, 1S1555 (TV)
D364	A7110160	Diode, Zener, 05Z7.5Y
D366	A7109474	Diode, Zener, 05Z4.7Y
D367	A7246711	Diode, 1S1555 (TV)
D401	A7110262	Diode, Zener, 05Z9.1Y
D402	A7568615	Diode, 1S1886
D404	A7150258	Diode, 1SS176
D405	A7110634	Diode, Zener, 05Z20Y
D406	A7978850	Diode, S5295G
D407	A7116515	Diode, Zener, 04AZ6.2Y

Location No.	Part No.	Description
D408	A7580660	Diode, 3JH61
D409(U101)	A7110311	Diode, Zener, 05Z10X
D409(U902)	A7116515	Diode, Zener, 04AZ6.2Y
D410	A7116815	Diode, Zener, 04AZ8.2Y
D440	23115915	Diode, ERC26-15T
D441	A7580660	Diode, 3JH61
D501	A7110262	Diode, Zener, 05Z9.1Y
D594	A7150258	Diode, 1SS176
D595	A7150258	Diode, 1SS176
D596	A7150258	Diode, 1SS176
D614	A7150258	Diode, 1SS176
D615	A7150258	Diode, 1SS176
D617	A7150258	Diode, 1SS176
D804	A7978855	Diode, S5295J
D805	A7568300	Diode, 1S1835
D806	23115690	Diode, GU-3C
D807	A7568300	Diode, 1S1835
D808	A7568300	Diode, 1S1835
D809	A7568300	Diode, 1S1835
D810	A7568300	Diode, 1S1835
D811	A7978850	Diode, S5295G
D812	A7150258	Diode, 1SS176
D813	A7150258	Diode, 1SS176
⚠ D814	A7116715	Diode, Zener, 04AZ7.5Y
D815	23118451	Diode, RU-4A
D816	23118943	Diode, ERC20-04
D820	A7150351	Diode, 1SS178
D822	A7116505	Diode, Zener, 04AZ6.2X
⚠ D831	A7568410	Diode, TVR-4J
⚠ D832	A7568410	Diode, TVR-4J
⚠ D833	A7568410	Diode, TVR-4J
⚠ D834	A7568410	Diode, TVR-4J
D836	A7568410	Diode, TVR-4J
D837	A7568410	Diode, TVR-4J
D839	A7117915	Diode, Zener, 04AZ24Y
DA01	A7150258	Diode, 1SS176
DA02	A7150258	Diode, 1SS176
DA03	A7150258	Diode, 1SS176
DA04	A7150258	Diode, 1SS176
DA05	A7150258	Diode, 1SS176
DA06	A7150258	Diode, 1SS176
DA07	A7150258	Diode, 1SS176
DA11	A7150258	Diode, 1SS176
DA15	A7150258	Diode, 1SS176
DA16	A7150258	Diode, 1SS176
DA17	A7150258	Diode, 1SS176
DA30	23115878	Diode, Zener, μPC574JC
DA31	A7150258	Diode, 1SS176
DA34	A7110041	Diode, Zener, 05Z5.1Y
DA35	A7150258	Diode, 1SS176
DA40	A7150258	Diode, 1SS176
DB01	A7110041	Diode, Zener, 05Z5.1Y
DB10	A7150258	Diode, 1SS176
⚠ DE01	23115571	Photo-Coupler, PC-510
DE02	A7150258	Diode, 1SS176
DE03	A7150258	Diode, 1SS176
DE04	A7116405	Diode, Zener, 04AZ5.6X
DE05	A7978850	Diode, S5295G
DE06	A7978850	Diode, S5295G
DE07	A7978850	Diode, S5295G
DE08	23118610	Diode, Zener, RD30ES-B4
DE09	A7116205	Diode, Zener, 04AZ4.7X
DE11	A7150258	Diode, 1SS176
DE12	A7116405	Diode, Zener, 04AZ5.6X

Location No.	Part No.	Description
DE55	A8636540	Diode (LED), TLS153, Red
DN01	A7288601	Diode, 1S2186 FA-1
DN02	A7150258	Diode, 1SS176
DN04	A7288601	Diode, 1S2186 FA-1
DN05	A7288601	Diode, 1S2186 FA-1
DN06	A7288601	Diode, 1S2186 FA-1
DN07	A7288601	Diode, 1S2186 FA-1
DN10	A7110041	Diode, Zener, 05Z5.1Y
DN11	A7288601	Diode, 1S2186 FA-1
DN21	A7150258	Diode, 1SS176
DN30	A7288601	Diode, 1S2186 FA-1
DS06	A7150258	Diode, 1SS176
DS07	A7150258	Diode, 1SS176
DS08	A7150258	Diode, 1SS176

MISCELLANEOUS

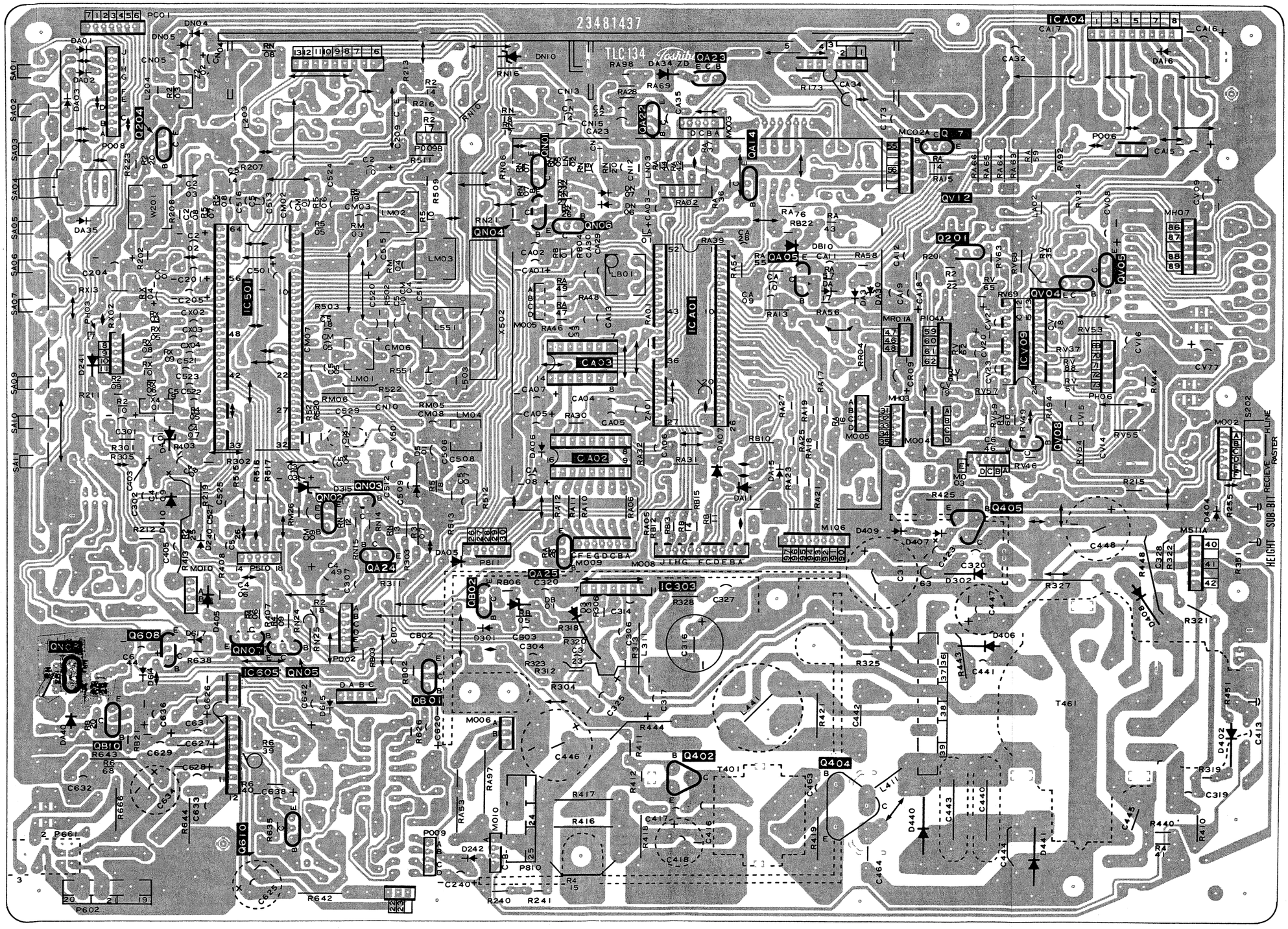
⚠ F801	23144868	Fuse, 3.15A
F801A	23165102	Fuse Holder
⚠ F802	23144871	Fuse, 1.6A
F802A	23165102	Fuse Holder
K901	23120693	Remote Senser, HC-TB05
K902	23120683	Remote Hand Unit, CT-9200
P661	23363607	Jack, Head Phone
⚠ P801	23176739	Power Cord
PC01A	23164270	Plug, 7P
PV02	23363872	Pin Jack, Yellow
PV04	23363873	Pin Jack, White
PV05	23363872	Pin Jack, Yellow
PV06	23363873	Pin Jack, White
S202	23145542	Switch, Lever, 1C3P
⚠ S801	23145434	Switch, Power, 2C2P
SA01	23145429	Switch, Push, 1C1Px3
SA02	23145429	Switch, Push, 1C1Px3
SA03	23145429	Switch, Push, 1C1Px3
SA04	23145579	Switch, Push, 2C2P
SA05	23145429	Switch, Push, 1C1Px3
SA06	23145429	Switch, Push, 1C1Px3
SA07	23145429	Switch, Push, 1C1Px3
SA09	23145429	Switch, Push, 1C1Px3
SA10	23145429	Switch, Push, 1C1Px3
SA11	23145429	Switch, Push, 1C1Px3
SA14	23145430	Switch, Push, 1C1P
SA15	23145430	Switch, Push, 1C1P
SA16	23145430	Switch, Push, 1C1P
SA17	23145430	Switch, Push, 1C1P
SA18	23145430	Switch, Push, 1C1P
⚠ V901A	23901740	Socket, CRT, 10P
W201	23250951	Coil, Delay Line, TRF2048
W661	23151372	Speaker, SPK-1146, 60x120 mm, 8ohm
X401	23153886	Ceramic Resonator, 503kHz, TCR1012
X501	23153979	Crystal, 4.43MHz
X502	23153885	1H-Delay Line, ADLCS343TH02
XN01	23153961	Crystal, 3.58MHz
Z101	23107683	PIF SAW Filter, F1036H
Z202	23107787	Ceramic Video Cerap, 3.58MHz, TCF-1044
Z203	23107658	Ceramic Video Trap, 5.74MHz, TCF1052
Z671	23107947	Ceramic Filter, 5.5MHz, SFE5.5MBF

Location No.	Part No.	Description
Z672	23107948	Ceramic Filter, 6.0MHz, SFE6.0MBF
Z673	23107949	Ceramic Filter, 6.5MHz, SFE6.5MBF
Z674	23153900	Ceramic Resonator, 500kMz, TCR1010
Z675	23107948	Ceramic Filter, 6.0MHz, SFE6.0MBF
ZA01	23153845	Ceramic Resonator, 4.0MHz, TCR1015
ZA02	24000788	Resistor Block, 4700 ohm x4, 1/8W
ZN01	23107980	Ceramic Filter, 4.5MHz, SFE4.5MB
ZN02	23107913	Ceramic Video Trap, 6.5MHz, TCF1018
ZN04	23107976	Ceramic Video Trap, 4.5MHz, TPS4.5MC2
ZN05	23107663	Ceramic Video Trap, 4.5MHz, TCF1055
PC BOARD ASSEMBLIES		
U101	23332738	IF Board, PW6001
U301	23332484	DPC Board, PW5883
U801	23332745	Power-2 Board, PW6004
U902	23332739	Main Board, PW6002
U903A	23332741	Power Board, PW6003-1
U903B	23332742	CRT Deive Board, PW6003-2
U903C	23332743	IR Amp Board, PW6003-3
U903D	23332744	A/V Terminal Board, PW6003-4
PICTURE TUBE		
⚠ V901	A5520080	Picture Tube, A66JQP90X01 (W)-RC
TUNER		
H001	23121694	Tuner, VHF/UHF, EG322
REMOTE HAND SET PARTS		
K902	23120683	Remote Hand Unit, CT-9200
AT01	23309865	Upper Case
AT02	23309866	Lower Case
AT03	23309867	Battery Case
AT04	23309868	Filter
PT01	23309869	Battery Terminal, Plus Pole
PT02	23309871	Battery Terminal, Minus Pole
PT03	23309872	Battery Terminal Spring, Short
ST01	23309870	Rubber
UT01	23332727	Remote Hand Unit Board, PW5976
ZT01	23109327	Ceramic Resonator, 2kHz, CSB455E

Location No.	Part No.	Description

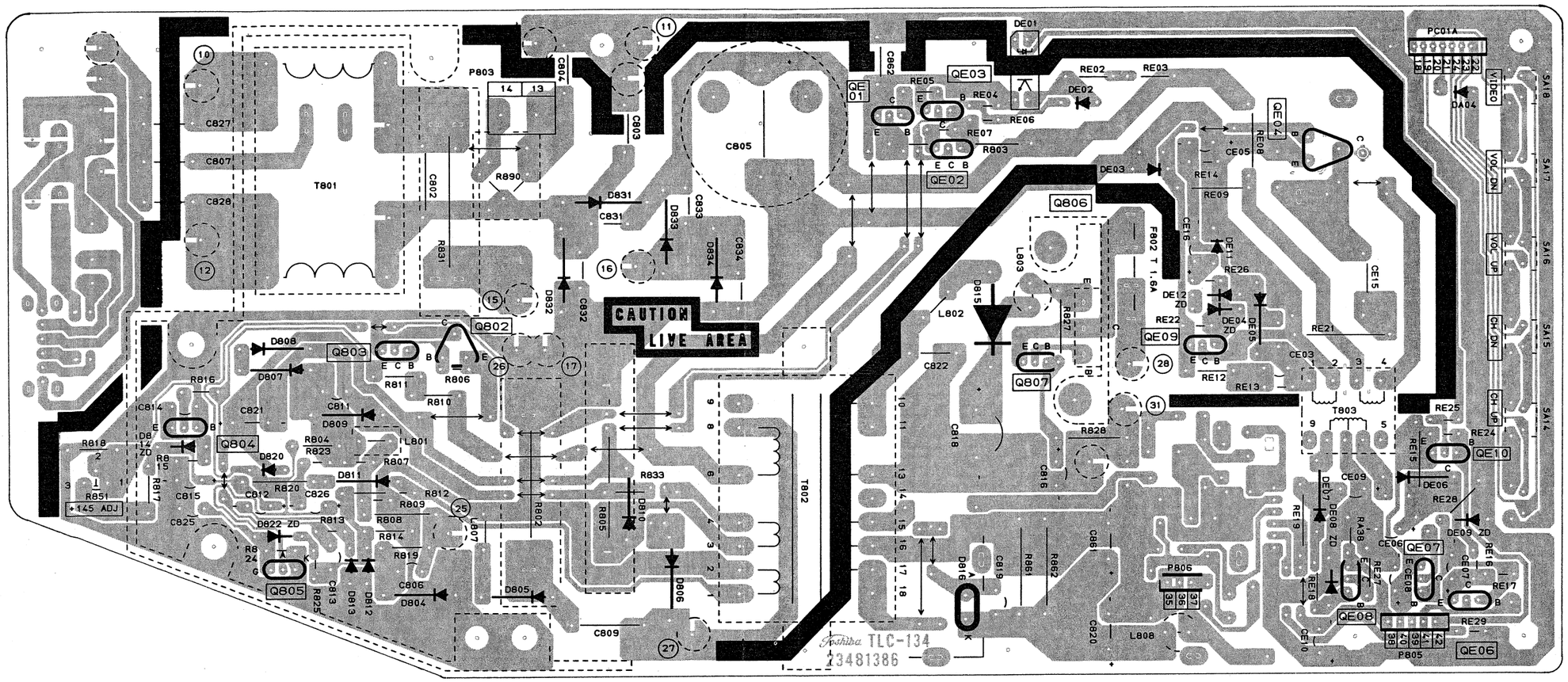
MAIN BOARD PW6002

BOTTOM (FOIL) SIDE



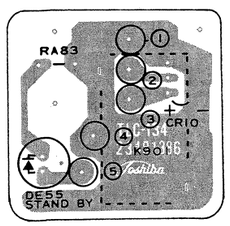
POWER BOARD PW6003-1

BOTTOM (FOIL) SIDE



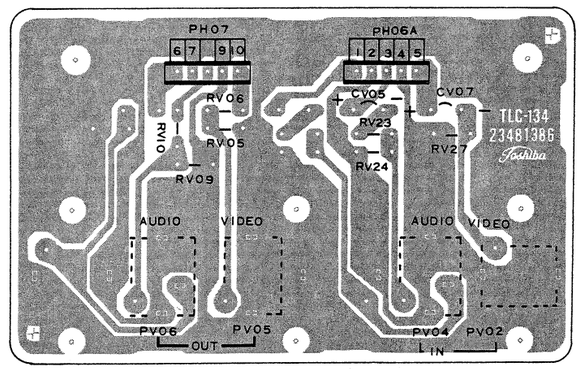
IR-AMP BOARD PW6003-3

BOTTOM (FOIL) SIDE



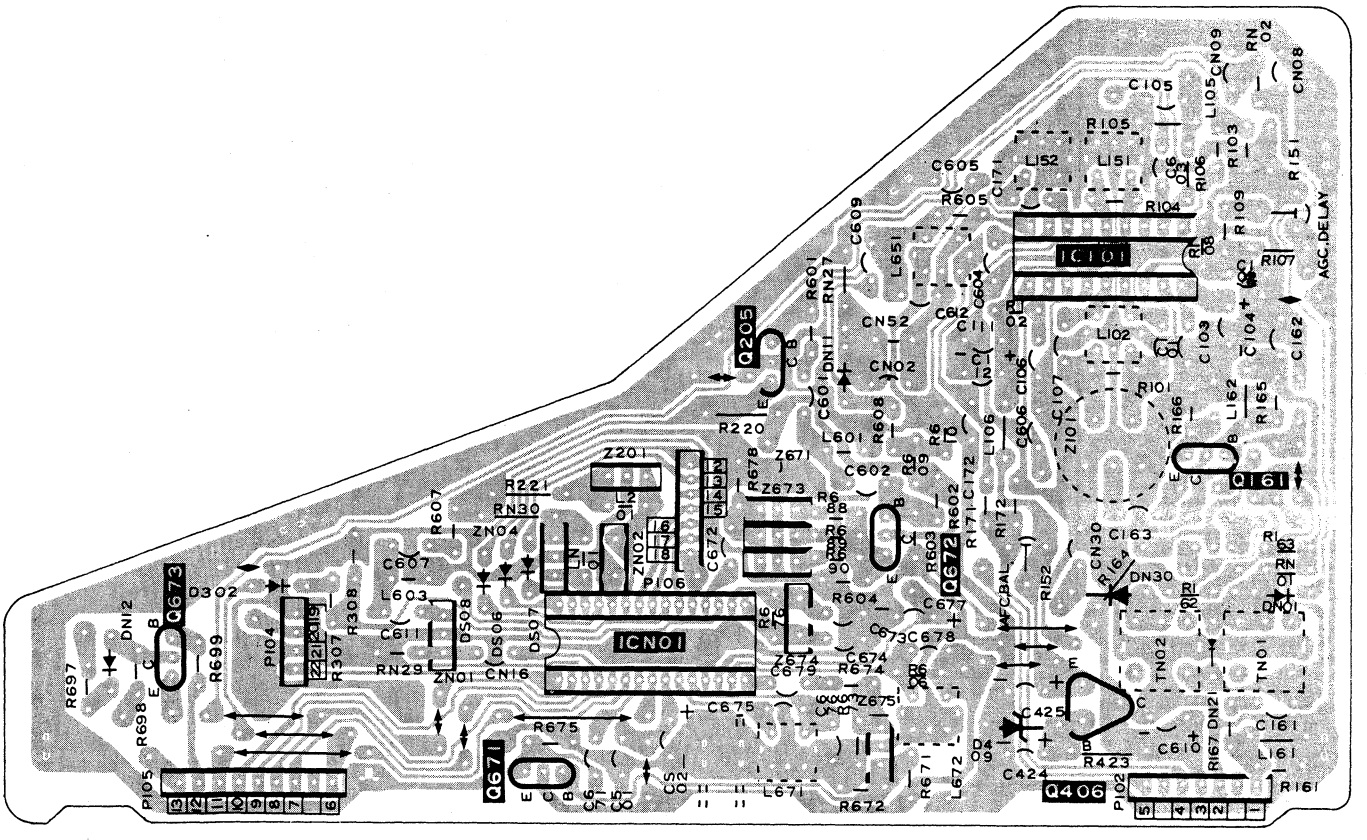
A/V TERMINAL BOARD PW6003-4

BOTTOM (FOIL) SIDE



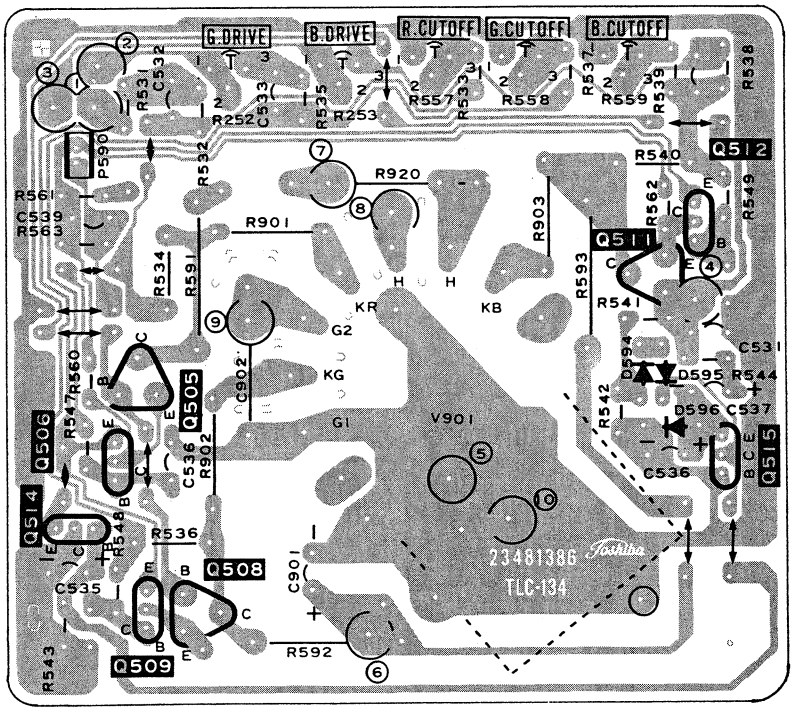
IF BOARD PW6001

BOTTOM (FOIL) SIDE



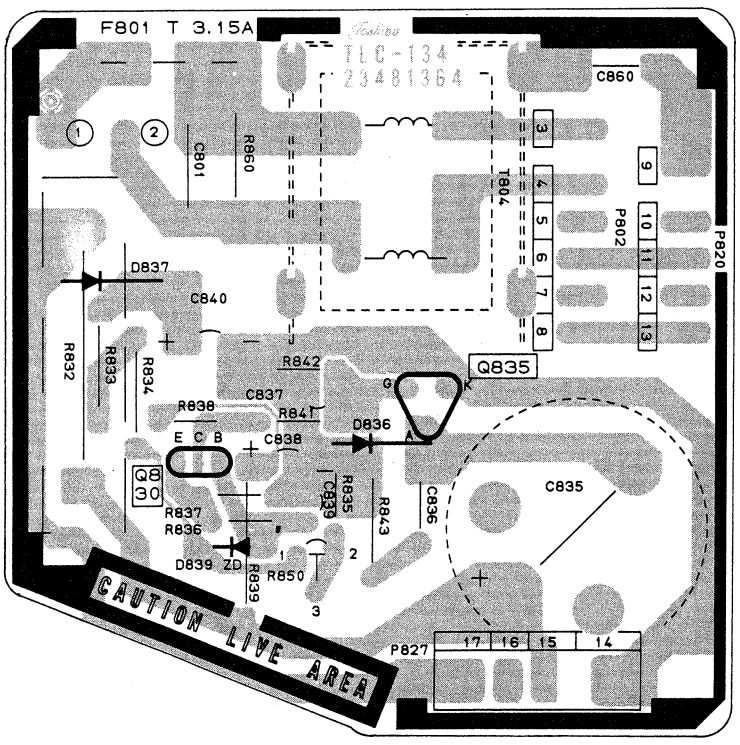
CRT DRIVE BOARD PW6003-2

BOTTOM (FOIL) SIDE



POWER-2 BOARD PW6004

BOTTOM (FOIL) SIDE



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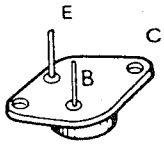
TERMINAL VIEW OF TRANSISTOR, etc.

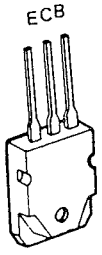
① 2SD1279



② 2SC2230
2SC2655

③ 2SA1015
2SC388ATM
2SC1815
2SA562TM
2SC1959
2SC1627
2SA950

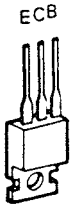
④ 2SA1265N



⑤ SFOR1B41

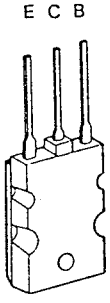
(SCR)

⑥ 2SD553
2SC1569
2SC3148
2SA1012

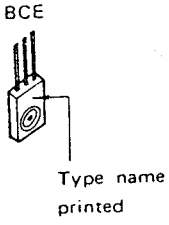


⑦ 2SC2068

⑧ 2SD1432



⑨ 2SC495



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2402

SERVICE DATA
FILE NO. 023-913
SUPPLEMENT

TOSHIBA
COLOUR TELEVISION
288X6M

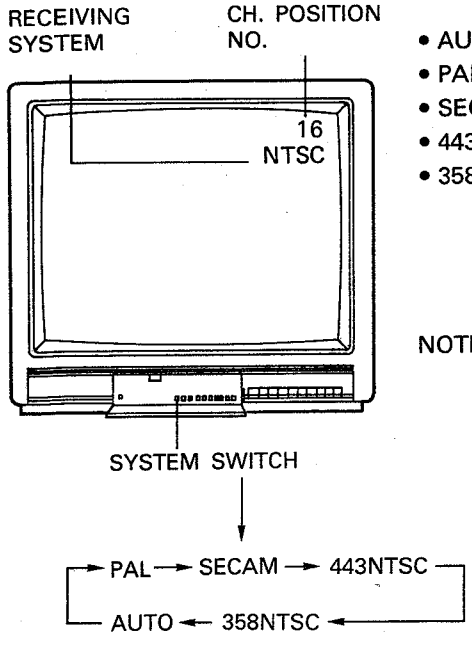
SUPPLEMENT TO THE SERVICE DATA

288X6M ..... FILE NO. 020-913

Description of "MANUAL" is added in the underlined sentence on the page 4.

COLOUR SYSTEM SELECTION SWITCH OPERATION

This TV receiver can receive 11 systems.



- AUTO ..... All signals of 11 systems can be received.
- PAL ..... PAL signal can be received.
- SECAM ..... SECAM signal can be received.
- 443NTSC ..... Signal from VTR on 4.43 NTSC can be received.
- 358NTSC ..... 3.58 NTSC signal can be received. U.S.CHANNEL, JAPAN CHANNEL (PHILIPPINES, KOREA)

NOTE: Colour system indication is displayed in green when the TV is switched on automatic mode and in cyanic when switched on manual mode.

When using the unit in poor electric field or unstable signal area, turn the system switch from "AUTO" to "MANUAL" (PAL, SECAM, 443NTSC, 358NTSC) for perfect reception.

Printed in Japan Aug. 1987 (SD)

288X6M

SCHEMATIC DIAGRAM (1/2)

NOTE: The parts identified by the international hazard symbols are critical for safety. Replace only with part number specified.

OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chssis ground, line voltage 220 volts, colour bar signal.
2. Voltages reading may vary ±20%.
3. The schematic shown is representative only.
4. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
5. Check FINE TUNING, AGC, BRIGHTNESS, CONTRAST and COLOUR controls for best picture, make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position.
6. Waveforms are taken using a standard colour bar signal.
7. Voltage readings in ( ) are measured with the SECAM colour bar signal received.

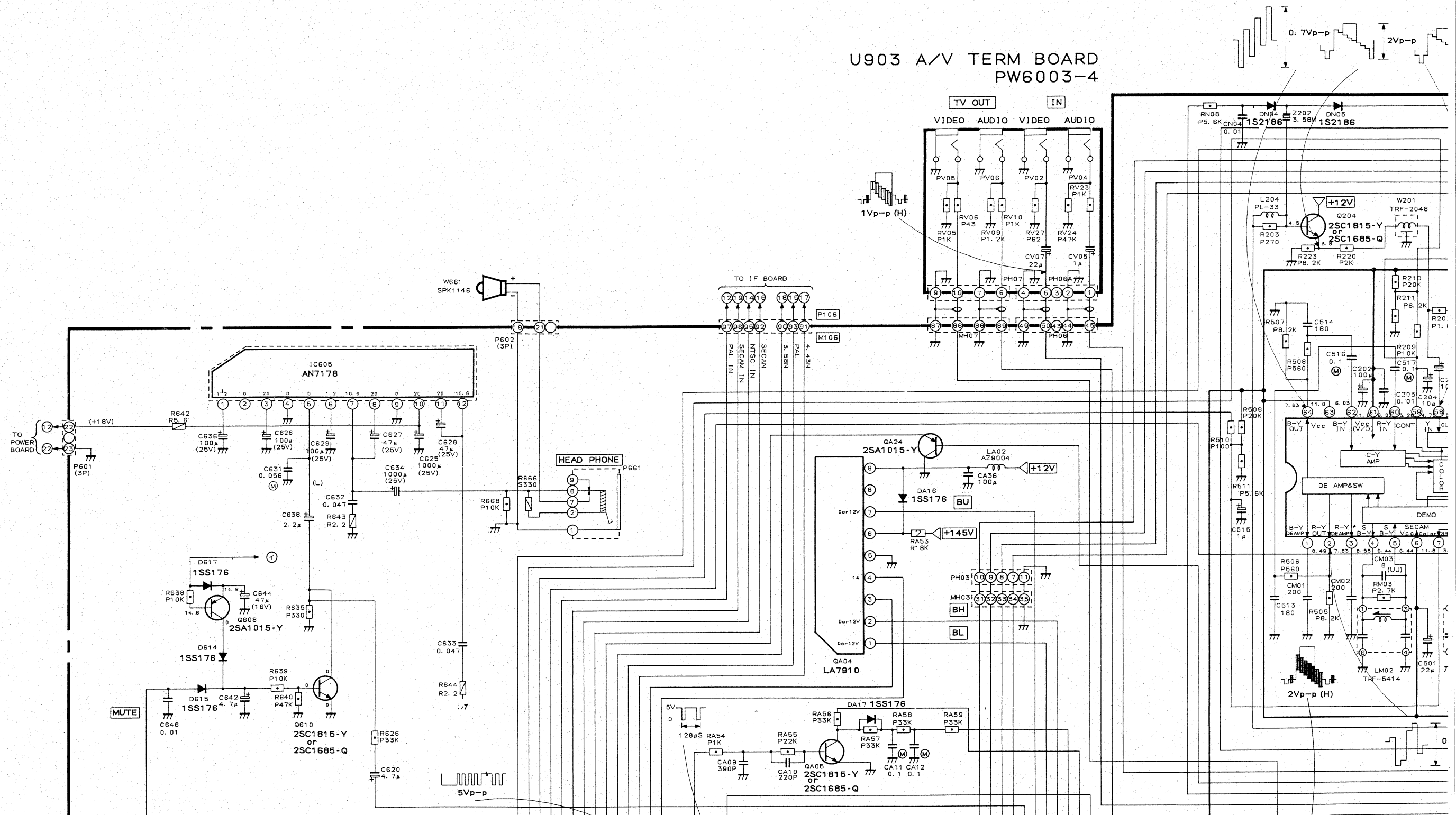
NOTES:

1. D.C. resistanace value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits are subject to change without notice.
3. ⬬ : Solder links.

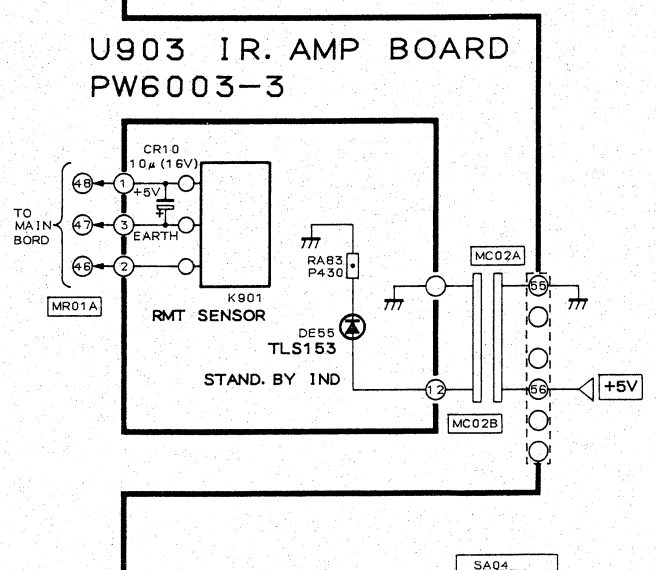
EXPRESSION

VALUE OF RESISTOR, CAPACITOR and INDUCTOR

1. Resistance is shown in ohm, k=1,000, M=100,000.
2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in mfd and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH, and the values less than 1 in H.



U903 IR. AMP BOARD
PW6003-3



	7	8
VL	0	0
VH	0	5V
UHF	5V	0

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RESISTOR

Table 1

Type	Mark
Carbon Composition	S
Oxide Metal Film	R
Insulated Carbon Film	P
Wire Wound	W
Cement	No Mark
Variable Resistor	
Positive Thermistor	
Negative Thermistor	
Fusible Resistor	FR

Table 2

Watt	Mark	Watt	Mark
1/16 W		3 W	3
1/8 W 1/6 W		5 W	5
1/4 W		10 W	10
1/2 W		15 W	15
1 W	1	20 W	20
2 W	2	25 W	25

CAPACITOR

Table 3

Type	Mark
Ceramic Disc 50V Only	
Electrolitic	
Electrolitic Non-Polar	
Variable Capacitor	
Other	

112

2Vp-p 1Vp-p

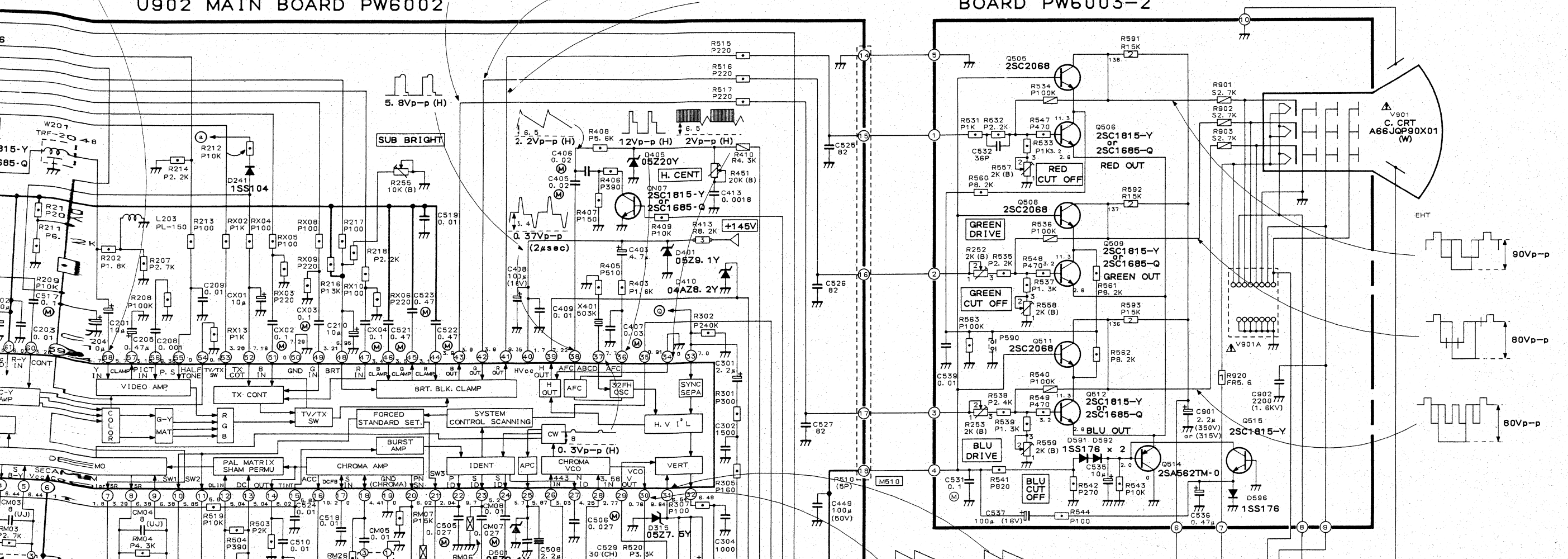
3. 4Vp-p 5. 2Vp-p

3. 4Vp-p 5. 2Vp-p

3. 5Vp-p 5. 2Vp-p

U902 MAIN BOARD PW6002

U903 CRT DRIVE BOARD PW6003-2



U301 DPC. BOARD
PW5883

288X6M

SCHEMATIC DIAGRAM (2/2)

NOTE: The parts identified by the international hazard symbols are critical for safety. Replace only with part number specified.

OBSERVATION OF VOLTAGES AND WAVEFORMS

1. Voltages read with VTVM from point shown to chssis ground, line voltage 220 volts, colour bar signal.
2. Voltages reading may vary ±20%.
3. The schematic shown is representative only.
4. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
5. Check FINE TUNING, AGC, BRIGHTNESS, CONTRAST and COLOUR controls for best picture, make sure that CONTRAST and COLOUR controls are in mid position and BRIGHTNESS control is almost in maximum position.
6. Waveforms are taken using a standard colour bar signal.
7. Voltage readings in ( ) are measured with the SECAM colour bar signal received.

NOTES:

1. D.C. resistanace value of a principal transformer is shown in this schematic diagram. These are measured for separated from the circuit.
2. The circuits are subject to change without notice.
3. ◓ : Solder links.

EXPRESSION

VALUE OF RESISTOR, CAPACITOR and INDUCTOR

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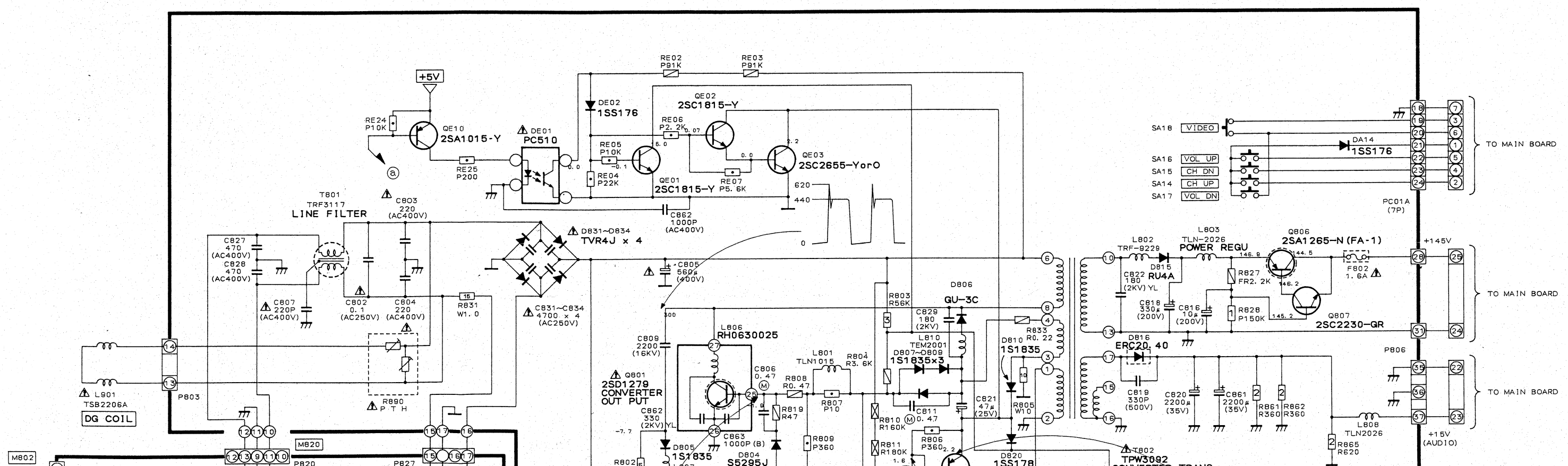
2. Unless other wise noted in schematic, all capacitor values less than 1 are expressed in mfd and the values more than 1 in pF.
3. Unless otherwise noted in schematic, all inductor values more than 1 are expressed in μH, and the values less than 1 in H.



U801 POWER-2 BOARD PW6004

U903 POWER BOARD PW6003-1

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RESISTOR

Table 1

Type	Mark
Carbon Composition	S
Oxide Metal Film	R
Insulated Carbon Film	P
Wire Wound	W
Cement	No Mark
Variable Resistor	
Positive Thermistor	
Negative Thermistor	
Fusible Resistor	FR

Table 2

Watt	Mark	Watt	Mark
1/16 W		3 W	3
1/8 W 1/6 W		5 W	5
1/4 W		10 W	10
1/2 W		15 W	15
1 W	1	20 W	20
2 W	2	25 W	25

CAPACITOR

Table 3

Type	Mark
Ceramic Disc 50V Only	
Electrolitic	
Electrolitic Non-Polar	
Variable Capacitor	
Other	

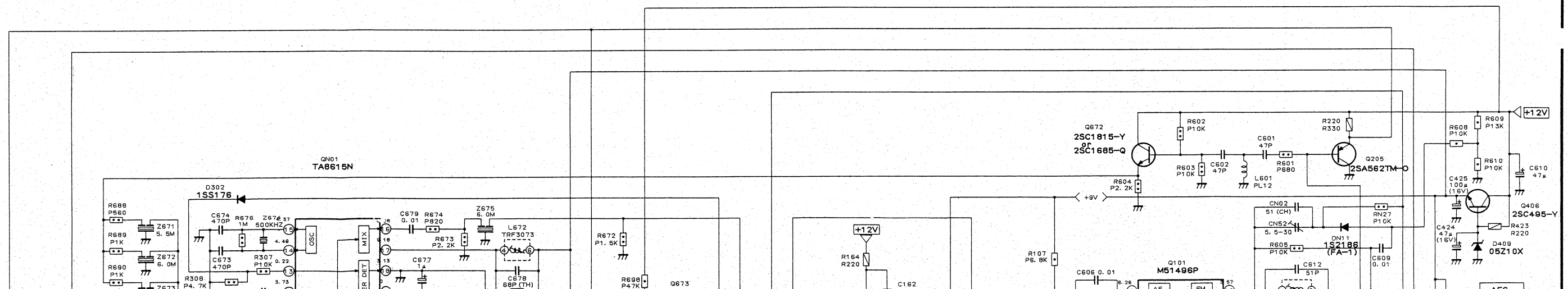
212

OARD

OARD

OARD

U101 IF BOARD PW6001



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BOARD

U101 IF BOARD PW6001